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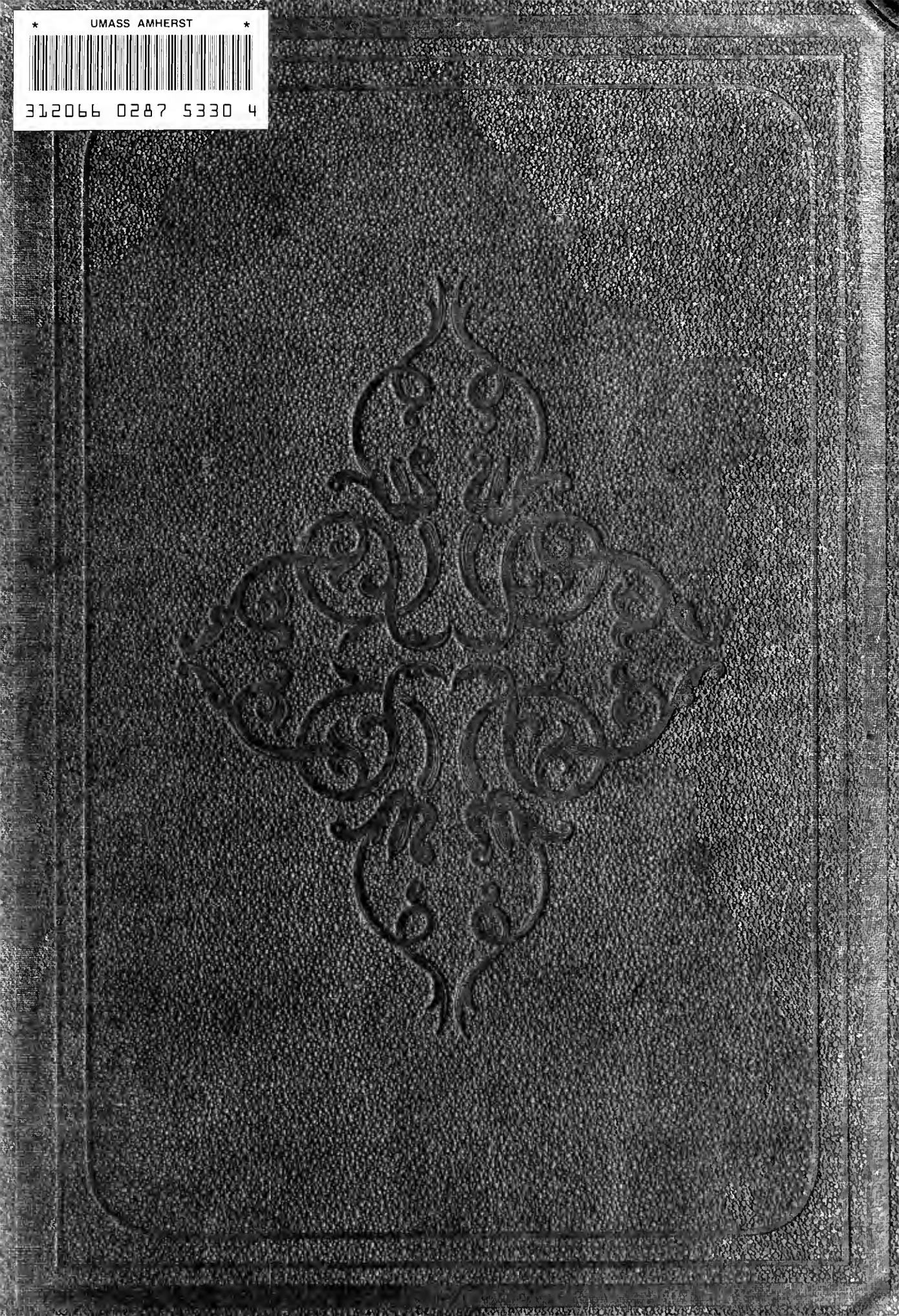

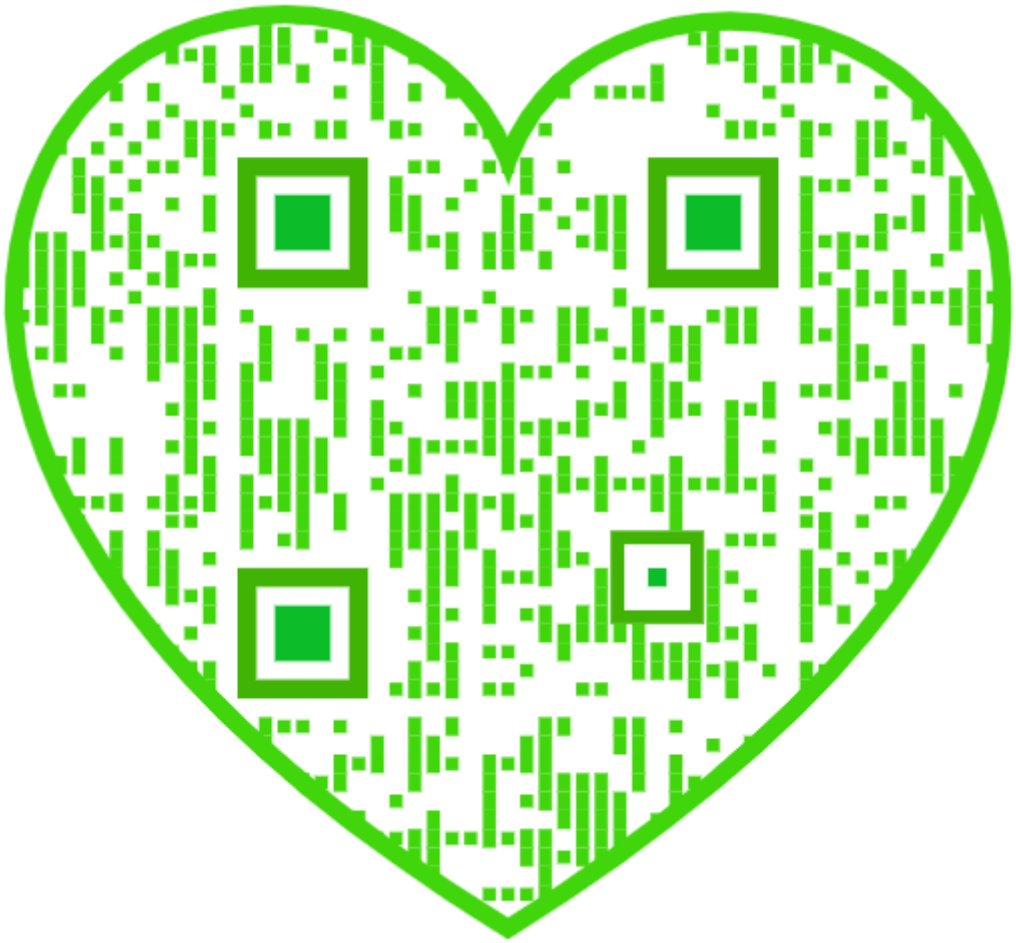

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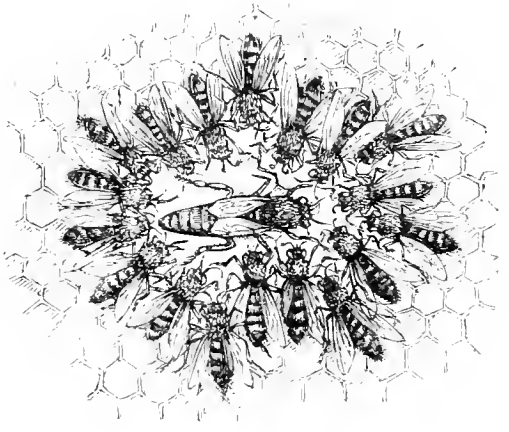

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THE

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AND BEE KEEPER'S ADVISER.

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1.—Write in a legible hand on one side of the paper only.

2.—Use no abbreviations which are not to appear in print.

3.—Keep every query distinct and separate, and give the fullest possible particulars, stating also the kind of hive used.

4.—When requiring an immediate reply, send a stamped ADDRESSED *envelope, or stamps for cost of telegram.*

The British Bee Journal.

THURSDAY MAY 1ST, 1873.

In offering our services to our bee-keeping brethren through these columns, we do not in any way intend or seek to rival or disparage any other work or journal in which bee-keeping is considered, nor to dispute its claims to their serious attention and consideration.

We are glad indeed to acknowledge their value and worth, and our indebtedness to those great Observers, Authors, and Contributors, who, since the days of the first great Bee Master, Huber, have accepted his initiative, and made plain the way by which the earnest amateur may acquire the proficiency in the knowledge of the Natural History and Habits of the Honey Bee which is so highly essential to all who intend to make bee-keeping either profitable, instructive or pleasureable.

We purpose while giving a gradual digest of all the best authorities on bee-keeping, to supplement them in cases where their general instructions are not applicable or are not clearly understood, by giving immediate advice in all cases of uncertainty or difficulty, thus placing ourselves in the position of Consulting Counsel to those of our subscribers who may need our assistance, and our only fee will be the annual subscription to this journal.

We do not anticipate much sympathy or support from the general public, nor can we hope to induce the bee-keeping cottager (so called) to abandon at once the superstitions and obscure theories by which that class of bee-keepers has been governed for so many generations. Our mission is to aid those enlightened members of the community who *cultivate* bees, and to induce others to engage in the charming pursuit, feeling assured that there is no other source of profit or amusement which affords such pleasant occupation, or yields so large a return for the capital invested when rightly understood and practised.

The immediate reply department of our work, will supply a want long felt by amateurs and beginners in bee-keeping, and from the extraordinary interest evinced by our numerous correspondents, we feel quite justified in considering it a leading feature in our undertaking.

We crave the indulgent forbearance of those who do not find in this the first number of our Journal all the information they expected or wished for, we scarcely hope to give directions at any time, which will be equally acceptable or generally practicable in every locality, or by every bee-keeper, and it is not possible for a perodical of this description to be exhaustive in any one of its parts. We therefore invite our clients to ask for any special information which they may need, and promise them our earliest and most careful attention.

Our columns will always be open for the exposition and free discussion of all theories and systems in bee culture, and of the relative merits of all hives and appurtenances, so that the truth regarding them may be established. We hope also that they will be freely used for the interchange of thought and the compari-

son of ideas and experiences among bee keepers, and that our Journal will be fully recognised as theirs, inasmuch as our interests and theirs are, and ever must be identical.

Our most earnest sympathy is with those who cultivate bees as a means of obtaining that useful and most valuable of all sweets, honey, and we believe we shall best advance the interests of apiculture by keeping that desirable object most distinctly in view, as it is really the true end, and only profit in bee keeping.

Our limited space prevents further enlargement on our views in bee keeping, and the objects which we hope may be attained through the medium of this Journal, but we cannot close without commending the proposed Bee Guild to the serious attention of bee-keepers. Its purpose is the advancement and improvement of the whole science of apiculture by the establishment of local clubs or conventions subject to a central authority, and as a proposal, it bears with it evidences of careful thought, and an earnest desire to make bee keeping successful and profitable.

In closing, we tender our most earnest thanks to our numerous subscribers and correspondents for their valuable assistance and advice in enabling us to bring our Journal before the bee keeping public.

Its circulation has been procured almost entirely through the zeal of individual bee keepers, which is itself sufficient proof of the interest felt in the advancement of bee culture, and while, through their efforts the British Bee Journal will this day find its way into every part of the United Kingdom, we feel bound to remind them that only by their continued support can we hope to maintain its position.

THE HONEY BEE.

The common Hive or Honey Bee has always from the earliest times been held in great veneration, esteem, or wonder by man. Probably the first notice of this remarkable insect is to be found among the Hieroglyphics of Ancient Egypt, and in the sacred writings, mention is frequently made concerning it, with regard to its industry, habits, and economy, and the usefulness of the products of its labours. Several remarkable passages are to be found in the Old Testament concerning the honey bee, which conclusively point out how much it was valued in the olden times. The minds of King Solomon and the Sacred Historians were evidently full of its wonders, and we find from the same source also, that honey and wax, its natural products, constituted important luxuries in this early period of the world's history. No regular account of Apiculture as a science, or the subjecting of bees to useful control with the view to securing their accumulated treasure, is to be found previous to the time of Aristotle in the fourth century before Christ, who, as a great observer of nature, extended his research into almost every department of natural history. Prior to the time of Aristotle, however, we read of the indefatigable labours of several other ancient naturalists, who appear to have spent years, and in some instances their whole lives in attempting to unravel the mysteries and ascertain the habits of this wonderful insect; but the records of their labours have for the most part been lost, or have only been handed down to us by poets and others who probably had access to their writings. Thus Aristomachus of Soli, in Celicia, is said to have spent 60 years in the study and contemplation of the bee, and Philiscus, the Thasian, lived so many years in the woods for the same purpose, that he acquired the name of "Agrius." For all purposes of history then, it may be assumed that to Aristotle is to be attributed the earliest account extant, of the habits and working of the Honey Bee, although there is good reason to believe that prior to his time there were several other eminent naturalists and bee masters who recorded the results of their observations and whose writings formed the subject matter or foundation on which so large a superstructure was afterwards raised by Aristotle and his immediate successors, Virgil, Columella, Pliny, and others, many of whom we may have occasion to notice hereafter.

We cannot, however, allow the name of Francis Huber to pass unnoticed here, for it is to his patient labour and study, aided by his unwearied servant and companion, that we are mainly indebted for the discoveries which have gradually raised Apiculture from the depths of superstition and doubtful theory.

It is not our purpose here to dwell on the gradual development of Apiculture as a science, but rather to endeavour to exhibit, in a strictly practical light, the fullest knowledge of the Natural History and habits of the Honey Bee, as they are at present understood, and to endeavour, by the free ventilation and comparison of opinions and experiences, to enable our readers to attain such a knowledge of its mysteries as may be both profitable and amusing, whether the interesting pursuit be undertaken as a business or a hobby.

For reasons which have been given, the Hive Bee has been reckoned among social insects, and has always been one of the most interesting to mankind,

on account of the direct benefit it confers on the human race.

There are many other insects which are really quite as useful to us, and indeed are indispensable, but which we neglect, because we are ignorant of their labours, but the bee furnishes two powerful and tangible arguments in its favour, viz., honey and wax, and is sure, therefore to enlist our sympathies in its behalf. Independently, however, of these claims to our notice, if the bee never made an ounce of honey, if the wax was as useless to us as wasps comb, if the insect was a mere stinging insect with a tetchy temper, it would still deserve our admiration, on account of the wonderful manner in which it constructs its social home, and the method by which that home is regulated.

THE QUEEN.

THE WORKER.

THE DRONE.

THE QUEEN.

As is generally known, a hive in summer usually contains bees of three distinct descriptions, called the Queen or Mother Bee, the Drone or Male Bee, and the Worker or Neuter Bee. The Queen Bee is at once the Mother and Sovereign of the whole hive, and when it is considered that during the height of the breeding season she is capable of depositing on an average three thousand eggs per day, some idea may be formed of the enormous labour she undergoes in her instinctive desire to keep up the prestige of the kingdom over which she reigns supreme.

She may easily be detected among the crowd of workers which surround her, by the stateliness of her movements, and the great length of her abdomen, which tapers gradually to a point, and is furnished at the end with a curved sting. Her head is rounder, her trunk is more slender and elegant, and much shorter than in her worker offspring; her under jaws are shorter, her legs longer, but without the hollow baskets always found in the workers, and her wings are not more than half the length of her body, and when closed slightly cross each other, the latter being a conspicuous badge of sovereignty. In colour she may be easily distinguished from the rest, differing variously according to the race to which she belongs or from which she may be descended.

The Queen of the English Brown Bees is nearly jet black on the upper part of the body, but underneath she is of a red orange colour, whereas the Queen of a Ligurian stock is more or less golden or orange over nearly the whole of her abdomen, and according as the respective races are crossed by inter-marriage, so vary the colours and beauty of the queens.

THE DRONE.

The Drones are the male bees, and their mission is the fertilization of young queens. They usually appear in April or at the beginning of May, and their numbers, which vary in different hives, from two or three hundred, to as many thousands, depend on causes which it will be our province to explain further on; they are usually about one third larger, somewhat thicker, and are of a darker colour than the workers, and have a shorter proboscis. The last ring of the body is visibly fringed with hairs which extend over their tails, but they are not furnished with stings, nor with baskets on their thighs as are the workers. Drones are longer than the worker bees, not so long as the queen, but are much thicker than either, the heavy bluntness of their appearance giving colour to an opinion prevailing amongst ignorant bee keepers, that they are workers which have lost their stings, and being unfit for labour or the defence of the hive, have become nurses, and grown fat.

THE WORKER.

Next in order come the Worker Bees, which are undeveloped females, properly called Neuters. A hive may contain from 6,000 to ten times that number, according to the season and system of management adopted. They are the smallest bees in the hive, they have very long tongues, with which they search deeply into the nectaries of flowers and blossoms, and suck out their secretions, and being furnished with what are called baskets on their thighs, which are formed by a hairy rim round a hollow in the thighs of their hindmost pair of legs, they are enabled at the same time to collect thereon the pollen on the stamens of flowers and blossoms, and thus carry home to their hives all the materials with which they elaborate wax, and rear their young.

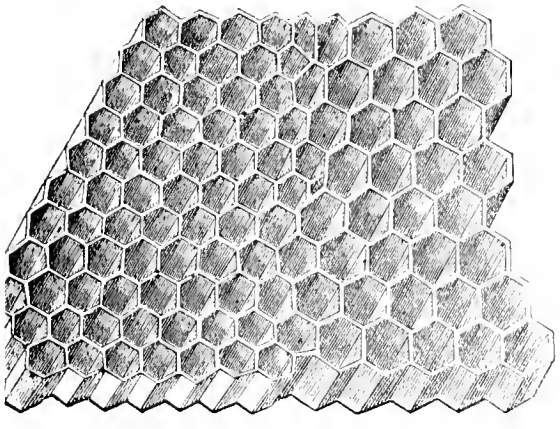
Of the wax, the wonderful structure called comb is made, in which the brood is reared, and honey and pollen stored, and in which, during cold wintry weather, the bees pack themselves for mutual security and warmth.

As Langstroth says, "These facts have been demonstrated so repeatedly, that they are as well established as the most common laws in the breeding of our

domestic animals. The knowledge of them in their most important bearings, is essential to all who would realize large profits from improved methods of rearing bees. Those who will not acquire the necessary information, if they keep bees at all, should manage them in the old-fashioned way, which demands the smallest amount of knowledge and skill," and we would add, yields the smallest amount of pleasure and profit.

The Comb.

There are two kinds of comb in a hive, usually called drone comb and worker comb, from their being principally composed of the cells in which the drones and workers have been respectively reared. The cells of drone comb are about one fourth of an inch in width, while those of the worker comb are only about one fifth of an inch wide, and both are perfectly hexagonal, yet, as in the same sheet of comb there may be found both drone and worker cells, and as it is evident that hexagons of two different sizes will not fit each other, there will also be found in almost all hives a third kind of cell of an intermediate and irregular character as is exhibited in our engraving, which shews the natural size and shape of each particular cell as above described.



The Cells.

It is usual to describe a hive as containing three kinds of cells only, the Worker, the Drone, and the Queen cells, but as the latter are not to be found in any hives which have not swarmed, or prepared to do so, such a description is not strictly correct, indeed, properly speaking, unless a hive is actually raising Queens or preparing to swarm, and the royal cells in the hive contain the royal nymphs, there may be said to be no queen cells at all therein; for in all other conditions they are imperfect, and evidences only that queen cells are intended, or have been there, for as soon as they have fulfilled their royal purpose, they are torn away and destroyed, leaving only the bases from which they were fabricated, and unlike all the other cells, are never twice used for the same or a similar purpose.

WHAT TO DO, AND WHEN AND HOW TO DO IT.

Now that swarming time is near, the bee keeper should prepare as many hives, supers, nadirs, ekes, &c., as under the most favourable conditions he will be likely to require during the ensuing summer, for it is far better to have an excess of them, than to require them and not be able to obtain them readily.

Hives are formed of various materials and patterns, and as is well-known are specially intended for the habitation of bees, but as we shall have a great deal to say of their relative merits and manufacture as we proceed, we will not tire the reader with further description here.

Supers are also made of various materials, sizes, and patterns, and are placed on the tops of hives, as upper stories, in which the bees may deposit their riches, and which are intended to be removed with their contents as profit to their owner.

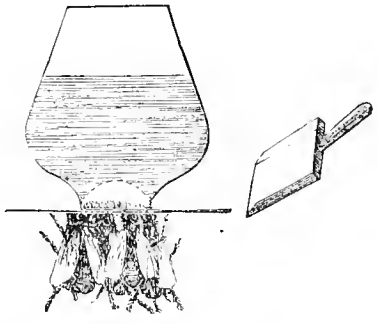
Nadirs are placed under hives to deepen them and to give more room. They are usually of the same shape as the bottom edge or rim of the hive, and of any depth the beekeeper may desire. They are principally used to prevent swarming.

Ekes are placed under nadirs and supers, near the end of the honey harvest, their purpose being to add a little more room thereto to enable the bees to continue their labours after the nadirs and supers are filled.

Bees should now be breeding very rapidly, and it must be borne in mind that as the brood increases so also increases the consumption of stores. Stocks that are strong are sometimes induced by the fineness of the weather, and the abundance of flowers and blossoms, to exhaust nearly the whole of the honey in their hives in their arduous endeavours to promote the increase of their numbers, so that a few days of wet or cold weather may really reduce them to a state of starvation. This must be carefully guarded against, for if the prosperity of the hive be checked, so that the queen ceases to deposit eggs, the daily loss to the stock will be equivalent to from 2,000 to 3,000 bees. When strong stocks are suddenly deprived of all supplies from the outside, and are approaching a starving condition, they do not always make it immediately known to their owner, and he, if unsuspecting, does not become aware of the mischief which has arisen until the partially consumed bodies of some white

nymphs are observed on the alighting board. Prior to that, and when the pinch of starvation is first beginning to be felt, the bees will eat up all the eggs and young larves, with all the prepared food which has been supplied to them in their cells; they then attack the sealed brood and consume all the soft parts of their bodies, throwing the desiccated head and thorax outside the hive, and if at this stage food is still withheld, the colony will perish in the hive or will sally out *en masse* as a vagabond swarm, either to attack another hive in better condition, or, as is more often the case, to fall to the ground from sheer exhaustion, and perish there.

This is a matter that must be most carefully guarded against, and as further advice on the matter involves a description of a feeding apparatus we here give an engraving of the cheapest and best appliance ever invented, a rough sketch of which was sent to querist No. 3.



FEEDING BOTTLE AND TIN.

All that is required is a wide-mouthed bottle, a common pickle bottle will do as well as any, a piece of flat tin, which, for convenience in handling may have one side turned up, or what is better, it may be formed into the same shape as a money scoop or small flat bottomed dust pan, and a piece of finely-perforated zinc, the whole not costing more than twopence. The perforated zinc is to be fastened over the hole in the crown of the hive, and must be fixed quite level and flat, otherwise when the bottle is set on it, the liquid food will escape and run down in the hive. It will be well here to say that the best, the cheapest, and far the safest liquid which can be given to bees, is made with loaf sugar and water with a little acid and salt. Five pounds of the sugar, two pints of water, half a wine glass of vinegar, and a pinch of salt; boil the whole well until thoroughly dissolved, and when cold, or nearly so, it will be ready foruse. It should be a thick syrup of smooth consistency, having much the appearance of honey, and somewhat resembling it in taste. In applying it, fill the bottle with it, and place on the open mouth of it the flat piece of tin, the scoop, or little dust pan, which ever may be adopted, and smartly reverse the whole, so that the bottle is left standing on the tin, neck downward; then place the whole carefully on the perforated zinc, and gently withdraw the tin. By this means the liquid food is brought into direct contact with the perforated zinc, but cannot escape, because its own pressure fills all the fine holes therein, and prevents the admission of air into the bottle; but being thus in contact with the zinc, the bees can easily get at it through the smallest perforations, and suck it out of the bottle direct, and it is not at all difficult to understand that as fast as they take the syrup out of it, the air oozes in to supply its place, and establish the necessary equilibrium.

Many advisers recommend that leno or canvass be tied over the mouth of the bottle before inverting it over the perforated zinc, but we have seen so many cases of loss occurring through its use that we especially caution our readers against it. The same cause which prevents the syrup escaping through the perforations in the zinc also prevents its escape through the leno or canvass, but there is this difference in the effect of the suction by the bees, that as the zinc is firm and stiff, the syrup must remain in contact with it as long as there is any in the bottle, so that the bees can always get a supply, whereas when leno or canvass is used, it not uncommonly occurs that the threads thicken by being moistened, or the syrup becomes too thick to pass easily through them, and being so, is too heavy to allow the air to pass upwards into the bottle, therefore, as the bees suck out the syrup, the leno or canvass parts company with the perforated zinc, and is itself drawn upwards into the mouth of the bottle, forming a little dome over the zinc with no parts of it touching the latter except the extreme lowest edges, as shewn in the engraving. It thus often occurs that with food almost within their reach, the poor bees are being tantalized and starved to death, while their owner, seeing that the bottle still contains some of the syrup, and blissfully ignorant of the reason why, considers his bees do not need further assistance, and so they are left to perish, or sally out and become what is called a vagabond swarm, which is sure to come to grief, as before described.

Feeding, although one of the most neglected, is one of the most important branches of bee culture. Stocks which in early spring are so light as to seem of no value whatever, may be so stimulated into activity by regular and gentle feeding, as to eclipse and throw into

shade many, which seeming heavy enough, are left to themselves. Early spring feeding promotes early breeding, which conduces to early swarming, or if swarming is not desired, ensures a strong army of honey gatherers. It is useless to wait until the honey season arrives before endeavouring to procure the increase of workers, and therefore every bee keeper should make it a positive rule to feed all his stocks in early spring gently and regularly, the weak ones to enable them to yield a surplus of honey, and the strong ones that they may yield both swarms and honey if desired. It is never safe to judge the condition of a hive by its weight alone, especially in early spring, yet how often do we hear of heavy stocks perishing even so late as May and June, simply from neglect, through being wrongly judged by weight, and thought to have sufficient honey.

Weight in a hive may be made up of thick old comb, dense masses of pollen, or even by the brood itself, yet there may be only a few ounces of honey in the hive, and consequently such a hive is in great danger, for should a few days of wet or cold weather ensue, during which the bees could not get abroad to obtain supplies, the whole stock would perish of starvation if left alone. Feeding will redeem many weak stocks, and enhance the value of strong ones, therefore feed regularly and continuously until you are sure the bees can find sufficient for themselves.

When bees are kept in straw, skeps, or in any other receptacle, the combs are fixed, in which it would be well to provide them all with new or clean floor boards, and while making the exchange, the hive should be turned bottom upwards, so that the sunshine can penetrate, and shew the condition of the combs as far up as the bees are clustered. If the hive is full of bees down to the bottom of the combs, and is fairly supplied with honey, little aid is necessary beyond furnishing the new floor board and brushing all dust and rubbish from the bottom rim of the hive, but when the hives are only partly filled with bees, a closer and more careful scrutiny is required, and some pains should be taken to eradicate all earwigs, slugs, snails, and ants. Spiders often get into the hives in this condition, and make their webs amongst the empty combs, causing great loss and annoyance to the bees, and these should be removed. The lower edge of the hive often contain the chrysalis and worm or larvae of the wax moth, and these cannot be too carefully guarded against, for if the moth or its larvae get possession of the combs, they speedily destroy their whole formation. The presence of the larvae may be detected by the appearance of sinuous trains of webby fibre which form the passages through which the larvae travel, and which the bees are unable to destroy. Wherever seen, all traces of the moth or its larvae should be mercilessly destroyed. The former is apt to deposit its eggs in all kinds of crevices wherever there may be any trace of bees wax, therefore it is important to take care that all such crevices are filled with paint or some other substance, which will prevent the wax or the moth obtaining a lodgment.

The larvae if it gets into combs consumes the bases of them destroying often as many as fifteen cells in every linear inch they travel, for it must be borne in mind that in destroying the base of one cell the bases of two or three others on the opposite side of the cell are destroyed also, and thus holes are made right through the combs, which the bees are quite unable to repair.

Where bees are kept in moveable comb hives and their owner wishes to adopt the very best means of insuring their comfort and of obtaining a correct knowledge of their actual condition, he cannot do better than transfer them bodily to new hives. This seems a startling thing to recommend, and at first sight may appear an expensive matter to carry out, but really it is not so, for if the bee keeper is ordinarily anxious for the well-being of his bees, he will already have provided new hives for the swarms, which he will be presently expecting, and it will be found far easier to examine the respective combs during the transfer than to do so singly, and to replace them in their own hives. The *modus operandi* is simply thus :— Remove the stock to be transferred to a stand or stool two or three yards distant, remove from the new hive (which must be of the same size and description as that to be operated on) the honey board or cover, and all the new frames, and set it on its floor board, exactly in the place of the other, then having taken the *usual precautions* to prevent being stung, remove the cover of the full hive in the most gentle manner possible, and stand quite still until the bees have somewhat recovered from their surprise at the sudden admission of daylight, and then proceed as gently as possible to remove the combs, and after examining them, place them in their exact relative positions in the new hive, and put on the new cover. Care must be taken not to injure the queen during this operation, and she should be most carefully watched in her transit from one hive to the other less she fall off the comb, and be trodden under foot and destroyed. There will be a few bees left in the old hive, and they will pertinaccously cling

to it, as if they loved it, but if the body of the hive and the floor board be separated, and the bees brushed off them on to the top of the new hive, they may be safely carried away.

By adopting this system of transfer in Spring, the stocks of bees in the new hives will be vastly improved in condition, being freed from all accumulations of filth and vermin, their owner will have acquired a full knowledge of their condition, and will have new hive covers to record it on, while the old hives, floor boards, and covers can be easily renovated, and rendered equal to new. The safest way to clean the hives is first to scrape with glass to remove all dirt and debris, and then to boil them in a strong solution of soda and water, after which a good hand scrubbing should be given, and when dry they may be carpentered and repaired. The frames purchased with the new hives will of course fit the old ones, so there will be no actual loss, or costs except for labour and soap suds, whereas the benefits to the whole apiary through the destruction of all vermin will be incalculable.

Swarms.

When bees are kept in straw skeps and swarms are desired, it is far better to drive or drum them out at the first sign of overcrowding, and thus form what are called artificial swarms, than to allow them to cluster in idleness outside their hives as they often do for many days before swarming naturally. A knowledge of the process of driving is highly essential, as only by its means can any of the operations necessary in the most simple system of bee management be performed, unless the stupefying process be resorted to, and as that materially affects the after-life of the bees, we do not recommend it, except in isolated cases where it is necessary to clear the combs of a few bees remaining after the driving operation has been performed.

Driving.

Driving should be performed in the middle of a fine day, when the majority of the bees are abroad, as less difficulty is then experienced in ascertaining the presence of the queen amongst those driven. Some writers recommend the evening as the best time, but if then the process is delayed from any cause, and the bees are unable to see distinctly, many will hide themselves within the folds of the operator's clothing, causing great inconvenience and loss of time, and many will be unable to find their way to their own stand, and will either perish out of doors or be killed in attempting to enter other hives.

The stock from which the bees are to be driven should be removed from its stand to a stool a few yards distant, and an empty hive put in its place, so that the bees, returning from the fields, may find a domicile there, empty though it be, and not feel compelled to enter a neighbouring hive. A little smoke from tobacco, rags, or decayed wood should then be blown into the full stock, which, in a minute or so may be lifted off its floor board, and turned bottom upwards. An empty hive of the same size should now be placed upon it, and a strip of towelling bound round their place of meeting, so that no bees can escape, then by drumming the lower hive with the hands or some light sticks so as as to cause a slight jarring of the combs, the bees will be induced to ascend to the upper hive, and thus form the swarm. The whole operation need not occupy more than twenty minutes in its performance, and is a very simple matter, but the after disposition of the bees require a little judgment and care. If the hive from which the swarm was driven contains a goodly number of bees it will only be necessary to set it permanently on a new stand, for as nearly all the bees left in it will be young ones which have not flown abroad, they will know no other locality, and will stay there, hatch out the brood and raise a new queen. The swarm should then be put on the old stand, in place of the empty hive, so that the bees returning from the fields may join it.

Should the driven hive be bare of bees and the swarm strong enough, the latter should be sent a distance of about a mile, and the old stock returned to its stand, to be replenished by the returning bees.

Should it be found that the whole of the bees are barely sufficient to establish the swarm, and protect the brood in the old stock, they should all be given to the swarm on the original stand, and the stock hive without any bees placed on the stand of the next strongest stock, removing the latter to another stand a few yards of, so that *its* returning bees may hatch out the brood of the driven stock, and raise queen cells therein.

Stocks from which swarms have issued always contain large quantities of mature brood, the hatching out of which so speedily recuperates the strength of the hive that in a few days it becomes apparently as populous as ever.

When bees are kept in bar frame hives, it is only necessary to place the comb of brood on which the queen may be found, in a hive similar to that from which the comb was taken, and set it in the place of the

stock operated upon, when the bees returning from the fields will join them and form a swarm.

Should the returning bees not make the swarm sufficiently numerous, combs, covered with bees, may be taken from the original hive, and the bees shaken into the new one, until the swarm is sufficiently strengthened, or another comb of bees and brood may be given to it. Empty frames must in both cases be given to fill all vacancies, or the bees will attach their new combs to the honey board, which will be very inconvenient.

When swarms are made as above described, the combs of brood should be placed on one side of the hive, and should form No. 2 and 4, so that the frames No. 1 and 3 may be protected, while being filled with combs, and it will be a wise economy of heat to enclose the whole with a bar frame, covered with strong brown paper, placing it as No. 6, until No. 1, 3, and 5 are filled, when it may be withdrawn, and other vacancies made. This plan ensures the building of straight combs, and pays well for the trouble taken, as by economising the heat of the hive, the bees are enabled to secrete wax and build the combs with greater rapidity than otherwise.

The paper covered bar frame is of course unnecessary, where moveable division boards are used, as by their means the space occupied by the bees can be regulated in any part of the hive.

FIRST SWARM OF THE SEASON.

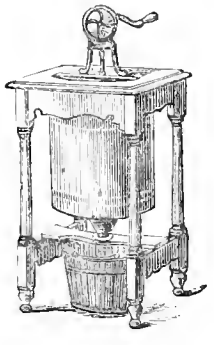
On Saturday, April 26, a fine swarm of Hybrid Italian bees, issued from a Woodbury hive, belonging to W. Hughes, Esq., of Windsor Road, Ealing, and was safely hived in a neighbouring garden.

Correspondence.

THE HONEY SLINGER OR EXTRACTOR.

To the Editor of the BRITISH BEE JOURNAL.

It is now a well-authenticated fact that the wax of which the bees construct their combs is a secretion of the bees themselves, and not as was supposed by some writers a vegetable product gathered in the fields and conveyed to the hive. To enable the bees to form this secretion they must have honey or some other saccharine matter, and the quantity used is so great in proportion to the amount of comb produced, that any means by which this consumption can be lessened must greatly tend to increase the honey harvest. It is estimated by most modern writers that from 15 to 20 lbs. of honey are consumed by the bees in the formation of 1lb. of wax, and it necessarily follows that the less wax required, the greater the amount of honey that will be stored by the bees in any particular hive. The usual manner of harvesting the produce is to empty the hive of bees either by driving or suffocation, to cut out the combs, and having sliced up those containing honey to drain their contents, and the residue having been washed and consigned to the melting pot, the product in most cases is sold at from 2s. 6d. to 3s. per lb. With honey at the moderate price of 8d. per lb., and wax at 2s. 6d. (which is about the average price obtained by the majority of bee keepers in this country), this manner of realising the produce shows a loss to the bee keeper of 7s. 6d. per lb. on every pound of beeswax he sells, because each pound of comb that could be given back to the bees would save them the consumption of at least 15lbs. of honey. This is a serious matter, worthy the attention and consideration of every keeper of bees. To provide against this loss by enabling him to empty the combs of their honey without injury to the former, so that they may again be given to the bees to refill, a machine has been designed and perfected by our American cousins, which, by the utilisation of centrifugal force, accomplishes the object in a very satisfactory manner. It is principally used in conjunction with bar frame hives, because from these combs can be most easily abstracted, emptied, and returned, although I believe some manufacturers claim for their machines the advantage that they will empty any piece of comb, however small.



THE HONEY SLINGER.

The machine that seems to give the most general satisfaction consists of a tin cylinder, inside which revolves a wire cloth framework, made of a size suitable to the frames intended to be emptied. The spindle down centre of this framework revolves upon a pivot at the bottom of the machine, and at top is geared so that a high rate of speed can be obtained when necessary. The frames of comb to be emptied are, if sealed up,

first uncapped by the use of a very thin bladed knife, and being placed in the revolving frame are, with very little trouble, emptied of the contents of one side of the comb. The frames are then turned round and the honey from the other side is with a few revolutions "slung" out, and the clean empty comb is then ready to return to the bees. It is estimated that by the use of these machines the apiarian will obtain 500 per cent. more honey than by the ordinary method. The honey itself is not quite so valuable as run honey but as the difference is only a few half-pence per pound, the balance is heavily to the credit of "The Slinger." One American beekeeper by the use of this machine took 600 pounds of honey from one hive of Bees in 1871, and another in one season abstracted 6162 pounds from forty-six stocks. These results are undoubtedly larger than would, under ordinary circumstances, be obtained in this country, but that our honey harvest could be considerably increased by their use is certain. There are times when bees can gather honey much faster than they can provide storage room for it, and it is to assist them at these times that we give additional space by means of supers. &c. If, however, we could empty the combs already filled, and return them at once to the hive, how much time would be saved them in building new combs, and how much waste of honey used in their construction would be obviated.

In conclusion, I hope that the *British Bee Journal* may be the means of stimulating Apiarians in this country to such an extent that we shall no longer be satisfied with the position we hold as a nation in all matters relating to Apiculture, and will lead us to emulate, if not excel the deeds of our brethren across the Atlantic.

Market Harborough. R. SYMINGTON.

ARTIFICIAL POLLEN FOR BEES.

To the Editor of the BRITISH BEE JOURNAL.

DEAR SIR,—Having read in the *American Bee Journal* that some beekeepers in that country were in the habit of giving their bees rye flour in the spring before they could gather pollen from the ordinary sources, I determined to give the matter a trial here, and accordingly as soon as bees could fly I set to work with the idea of inducing them to believe that spring was upon them all at once. To each hive I gave half a pound of syrup daily, which I have no doubt rather astonished them, and led them to believe that the honey harvest was rather earlier this year than usual. This of course, set the queens to breeding rapidly, and consumption of the old pollen in the hive was a natural result. I then obtained some rye flour or meal, and having placed it in two shallow boxes near the hives, I waited the result. The first day or two the bees took no notice of it, but soon a few with enquiring minds having made a minute inspection of the contents of the boxes, communicated to the bee community at large, that in conjunction with the unusually early supply of honey this spring, pollen was to be obtained in quantity close at hand. At it they went, and much amusement they afforded me in watching their actions. Some rolled in it, and took all they could in that way, going home like veritable millers. Others moulded up a small ball, and taking it between their legs conveyed it to the hives in that manner; in fact they seemed very much puzzled as to the best way of availing themselves of such an unusual supply of their farinaceous requirements. I fancied they seemed to want something to stand upon, to enable them to gather it up easily, so I mixed some bran which I happened to have at hand, with the meal, and this seemed quite to meet the exigencies of the case, for now they were no longer puzzled how to act. Alighting upon the bran, they gathered a little meal, then hovering over the box they brushed it back upon their hind legs, until deposited in their little baskets. Down they went, again and again, each time repeating the same operation, and the pellets upon their legs each time growing larger, until at length fairly loaded, away they flew happy enough with their new baby food. For four or five days only did this last, for I soon found them bringing in pollen of the orthodox yellow tinge, and excepting early in the morning my boxes were now neglected. Happening to meet a scientific beekeeper in this neighbourhood, I told him what I had been doing, and he rather damped my arduour by informing me that eventually my hives would doubtless suffer for it, as the meal would be very likely to produce a "fungoid growth." Now, Sir, will you please to give me your opinion upon the matter, and, if possible, allay my fears, for not only did I treat my own bees thuswise, but I recommended a friend who has twenty stocks to do the same, and may, though unwillingly, have seriously damaged his prospects. I should have felt much alarmed for the safety of my own bees and those of my friend, but your prospectus came to me, and with it hope, for having read many of your articles on bees, hives, &c., in *English Mechanic* and other papers, I feel sure that you can and will put me right in my difficulty.

The idea of a *Bee Journal* of our own, delights me muchly. It is just what we want, and (please allow me to say it) the right man is at the helm, and will steer us safely through the troubles that beset the path of we beginners. I enclose you my subscription, and whilst wishing you every success, shall not be satisfied with that, but will try and make all my bee keeping friends subscribers also.

NOVICE.

There is little danger in the use of artificial pollen as the bees will consume it as soon as collected. ED.

PROFITABLE BEE KEEPING.

—o—

To the Editor of the BRITISH BEE JOURNAL.

MR. EDITOR,—I am pleased to hear you are commencing the *British Bee Journal*, as it is a publication much wanted in this country. I have often wondered how it was that we could not have our monthly Bee Journal like all other great countries. In America there are no less than six monthly Bee Journals and Magazines, exclusively devoted to bees and bee keeping, and it is through the influence of these publications, that they have made such wonderful improvements in Apiculture.

From the report of the Commissioners of Agriculture of the United States of America, bee keeping is assuming a national importance. In 1850 the amount of honey and wax reported in the census returns was 14,853,790 pounds; in 1860 it was 24,689,144 pounds: since that date wonderful improvements in the management of bees have taken place, with bar frame hives, in which the bee keeper has the perfect control over his bees, and makes them do just what he wishes, can make swarms when he likes or not allow them to swarm at all, and so collect three to four times the quantity of honey, the combs can easily be taken out of the hive, filled or partly filled with honey, which can be extracted without injuring the comb, which is put back into the hive to be refilled with honey, and emptied again, thus saving sixty to eighty pounds of honey in each strong stock of bees (as they consume about one pound of honey to make one ounce of comb) by the use of the centrifugal honey extractor, they have also got the Ligurian or Italian Alp Bees, with their proved enormous prolific powers and honey gathering qualities, so that the common black English bee is fast disappearing from that country.

With all these improvements a bee master can now secure more than one hundred pounds of honey, where he formerly got only twenty, with three or four times the trouble on the old system of management. The estimated value of the surplus honey taken in the United States in 1868 was $7,500,000.

Germany, Italy, France, and Russia all have their Bee Journals, and I hope that the *British Bee Journal* will be supported as it should be, so that the proprietors will be able to carry on the publication, and so enlighten the public and working men to the waste and loss to themselves, even at their very doors, as thousands of tons of honey are annually lost to the nation for the want of collectors. Every cottager in suitable districts could pay his rent from the great profits of bees, besides supplying himself with a new coat and his wife with a dress. I was going to say the wife was the better man of the two, as bee keeping is peculiarly adapted as a healthy, interesting and profitable employment for women, suited to their tastes, and to their physical strength.

An illustration of this is given in the history of a lady in America, who unfortunately lost her husband, and was left in rather poor circumstances, so that she was obliged to keep a school. Having a little time to spare after school hours, she kept a few hives of bees, which she found from experience to be so much more profitable than the school, as well as more healthy and interesting employment, that she gave up the school, and devoted all her time to bee keeping, from which she has derived a good competency, and is now one of the greatest authorities amongst so many clever apiarians in America. She has written a pamphlet on bees, and often contributes very valuable articles on bees to the Bee Journals of America.

Another young lady, only seventeen years of age, Miss Katie Grimm, daughter of Mr. Adam Grimm, of Jefferson, who is a clever bee master, and has several apiaries three or four miles distant from one another, to each of which he sends one of his daughters to manage during the honey season. The year before last this young lady took the management of her fathers northern apiary, and during twenty days in July, she extracted with the "centrifugal honey extractor," 3,700 pounds of honey, without the least assistance from anybody. This is an authenticated fact, but I will give you an extract from her own account of it in the American Bee Journal:—"June 30, father was here to examine my hives, when he also made twenty doubled hives, from which I was to extract honey about every three days; as he thought that during that time they would be filled again. July 5th, I extracted my first half barrel, which was one hundred and eighty five pounds. When I was

through with it, I felt pretty well tired out, and thought it was quite a task for one day, but I had then no idea of what was still to be done. July 8th and 9th I extracted one and half barrels, so that I then had two barrels. July 14th, I extracted one and half barrels, and during the rest of the week, two and half barrels. July 17th, two barrels. July 19th and 20th one barrel, and four or five days afterwards I filled the tenth barrel, making 3,700 pounds.

"By this time I had given up the notion of half a barrel being a days' work. You will bear in mind Mr. Editor, that I was all alone, so that I not only extracted the honey, but also took the frames out of the hives, and put them in again to be re-filled. The room in which I lived all this time was so filled up with barrels and boxes, that I feared its breaking down. In all father's apiaries in July we got thirty five barrels, or about 12,000 pounds of run honey and 15,000 pounds of box honey."

Now, Mr. Editor, the above two cases out of hundreds prove that bee keeping in the improved way, is very profitable, and they also shew what women can do when they are inclined. Only get them interested in your *British Bee Journal*, and it will be a success.

WILLIAM CARR,

Newton Heath, near Manchester.

FERTILE WORKERS.

To the Editor of the BRITISH BEE JOURNAL.

SIR,—Some people are still sceptical as to the existence of fertile workers, others, who believe in them, hold erroneous opinions regarding their production, in some instances imagining them to be common workers which have been fertilized by the drone. While these abnormal queens (?) cause much speculation amongst some classes, they on the other hand confound many as to what have been the causes of supposed regicidal attacks and other mishaps to the reigning queens, when they exist unknown to the bee keeper. I will endeavour then, to explain under what circumstances these bees are produced, and then will show how they cause the ruin of the hive that contains them.

The fertile worker is raised from the larvae, which produces the common working bee, which the royal food has been lavished upon when too far advanced, the insect being then incapable of full and perfect transformation through having been too long fed on the food with which worker bees are raised. Hence it appears desirable, as a rule, to have our queens raised from the first hatching of the egg, on royal food alone. Those who used moveable comb hives can in a great measure, control this matter, and in many instances avert the probability of these insects being raised, but those who use the old fashioned straw hive are sure to meet with many disappointmets, especially where artificial swarming is practised. For instance, from various causes, at swarming time, the queen will from some cause cease to deposit eggs in the hive, and should a swarm be taken from it at that time fertile workers will be raised, but in some instances, when the larvae has not all been too old, it is possible a queen may be raised, perfect so far only, however, as to be able to receive fertilization and deposit eggs. but never sufficiently prolific to constitute the mother of a good hive.

Such a queen, or even a first rate perfect one, may meet an untimely end through the existence of these fertile workers, for the latter will not hatch out until the 21st day, by which time the perfect queen may be laying, and become an easy prey to the more agile bee. These are considered regicidal attacks, and as the eggs of the fertile worker will produce nothing but drones, a hive is speedily brought to ruin if unnoticed, as is often the case, in those with fixed combs, whereas in moveable comb hives inspection can be made at any time, and the mischief averted. Singular to say these fertile bees commence egg laying when about three days old, and outward appearances show no sign that anything is wrong, and in appearance themselves, like the hermaphrodite, to the worker, they resemble the queen from the smallest possible degree, to the almost perfect insect. It appears then that the ovaries of the bee are more quickly developed when treated for queens, than the other sexual organs, and that the first instinct of the fertile worker (however imperfect it may be) is to destroy the queen regnant, and then to commence egg laying, without any desire to mate with a drone.

A LANARKSHIRE BEE KEEPER.

THE STEWARTON HIVE AND SYSTEM.

To the Editor of the BRITISH BEE JOURNAL.

In the opening number of a periodical such as the present, it is befitting some notice should be taken of the hive and system, yielding most probably, the largest quantity, and decidedly the finest quality of honey comb which in this country passes into commerce.

The stranger or tourist, visiting our western metro-

polis, Glasgow, is naturally attracted, more particularly if he has bees at home, to the exceedingly handsome octagon supers of dazzling pure honey comb, which in the season, meets his view in the windows of the Italian warehouse keepers. He cannot fail to be struck at the massiveness of the individual combs, their straightness and beautifully rounded finish, no bleeding severed attachments from the brood combs through the abominable central hole, as in the common straw skep, and entirely free from the discolouration caused by the heat emanating therefrom, pollen or bee bread, young grubs, and all such impurities. Each of the upturned boxes, covered with glass, kept in position with crimson paper, forming a border to the margin, and serving the double purpose of excluding the atmosphere and all dust, and acting as a foil to the purity of the honey comb. Should curiosity tempt him inside for a narrow scrutiny, he will find that the boxes are about four inches in depth and neatly dove tailed, with windows back and front, and that all of the seven combs are wrought to moveable bars kept in their place with half-inch brass screws, consequently it is optional what comb to choose, it can be removed without the smallest leakage or waste, a spare bar inserted, the slides (or moveable slips of wood working in grooves in the bars, and fitting the spaces between) run in, and the whole rendered air tight as before.

The present writer has a vivid recollection of the time, when treading the thorny path of his noviciate, being so attracted, and on stepping in the shop, and feasting his eyes on the display, priced a particularly fine box, and was told that it was a first prize one, and cheap at three guineas. At the close of the following season (a capital honey year) I again visited the same place, and on commenting on the groaning shelves, tier upon tier, I counted rows of supers, and was assured by the dealer, that his then stock of honey comb he valued at £200, but could give no information as to the system of bee keeping yielding such results, farther than it was chiefly the product of one little plant, the white clover, and he drew his supply mainly from one county, Ayrshire. I was previously familiar with the excellent milking qualities of the Ayrshire cow, and was naturally led to the conclusion that that county must surely be literally "a land flowing with milk and honey," and to explore this marvellous system, a tour the following season was duly determined upon, as a preliminary. Authority after authority on the bee was ransacked in vain on the Stewarton system, all were alike silent, next an appeal to my preceptor, a shrewd and most experienced bee keeper on the old straw hive school. My glowing description of the marvels I had witnessed fell tamely on his ear. Have you seen them too I enquired? Oh, yes, with a shrug of his shoulder and a twinkle in his eye, "Yon's a sugar" was the reply with which I was staggered. Well, there might be a black sheep in a flock, but such wholesale rascality I could not give credit to. An introduction to a highly reputed scientific bee master in the neighbourhood of Glasgow, was next procured, and he was called for. Could he give any information as to the working of the Stewarton system I enquired? I was met with, "certainly not, he did not approve of it and had written it down. Had I seen his last article, &c., &c.?" The bar hive he employed I saw at a glance, was much two small for a Stewarton super to rest upon, both parties were evidently alike in the dark.

My projected trip was in due time carried out, and were I to detail all I saw and gleaned on my first and subsequent visits, my "Sunny memories" of Ayrshire would, however entertaining and instructive to the reader, land me in the same predicament as Mrs. Stowe, in drawing the veil too much from private life. Suffice it to say I found the Stewarton bee keepers were in the habit of procuring swarms from the earliest districts along the coast, hiving them at first singly, adding a second prime swarm when procurable, eight or ten days thereafter, and after comb building had been fairly started in the super, nadired with a third breeding box. I at first objected to the combining two swarms after this fashion, seeing in our locality such were worth a pound a piece. My objection was met with "Swarms hived singly did not generally yield anything, with them combined they were almost certain to give one, possibly a couple of supers, covering more than the cost of bees," and that the bee keeper had over and above a capital strong colony against the following season, was certainly sound reasoning.

The colonies were moved gradually inland, with the progressive advance of the white clover, till they had gleaned its latest blow at the very moor edge there despoiled of their flower honey harvest, and were then transported across the intervening Frith of Clyde to the Island of Arran, to rifle the purple heath clad hils of their treasures, and if the season proved favourable, other supers were again filled, if not at least as much stored, as to tide the industrious little workers over the rigors of the coming winter. So many as 300 stocks I was assured the season before last were grouped around the little village of Lamlash alone.

Having procured a supply of Stewarton hives and set to work to carry out the valuable instructions so fraternally afforded me by the Ayrshire bee keepers, but with faint hope of much success, being located in a continuous "green cropping" district, altogether lacking their rich old pasture leas, while previously working the old straw hive on the swarming plan, I was far out distanced by others, in the less cultivated and older pasture neighbourhood nearer the moors, although I possessed one advantage, having an avenue of old limes and a sprinkling of venerable planes. Still 35 lbs. for tops and 22 lbs. for second swarms were as good weights as I could recollect of. However by a painstaking study of the Stewarton system, and after effecting certain improvements to be afterwards alluded to, and procuring through the enterprise of that most excellent and deeply deplored Apiarian, the late T. W. Woodbury, Esq., of Exeter, several stocks of the then newly-introduced Italian Alp Bee, and found after continuous experiment that the first cross between the yellow Italian princess and the drone of our old black aborgines, afforded a progeny for honey gathering qualities, much superior to the pure of either variety. I consequently deposed my sable monarchs, introduced and continued to keep up exclusively such at the head of all my depriving hives, and by these aids was enabled to put the feats of former competitors pretty much into the shade.

I had the satisfaction of a visit from my old preceptor, and after he had carefully scrutinised some octagon supers, which would vie with those he had in his inexperience too rashly put down to sugar syrup, and after trying the weights of some of my Stewarton colonies, from which they were taken, quickly drew forth his note book, and enquired the address of their maker, while I hazarded the remark, it was singular that such never required nor received a particle of sugar, while weak swarms and "beat outs" made such considerable inroads on our crush sugar cask.

As a few facts are at all times worth bushels of theory, I will, in conclusion draw these hurried notes to a close, by giving the harvest taken from my best Hybrid Italian Colony, in the good honey season of 1868, reserving, should our editor kindly grant the space, in the succeeding number, some details of the mode of manipulating the Stewarton hive in particular, with a glance at its origin, and possibly, too, some retrospect of the storifying system generally.

				lbs.
July	9—1	Octagon	Super	23½
,,	9—1	ditto	ditto	22
,,	16—1	ditto	ditto	21½
,,	27—1	ditto	ditto	23
,,	27—1	ditto	ditto	21¾
,,	27—1	ditto	ditto	19¾
,,	27—1	ditto	ditto	19
Aug.	1—1	ditto	ditto	22¼
Sept.	14—1	ditto	ditto	12
,,	14—1	ditto	ditto	10
	10	Octagon	Supers, gross	194¾

DEDUCT.

10 Supers, at 3 lbs. each	30	
		lbs.
Net Super Honey		164¾

Sept. 17—Stock hive weighed gross	70½	

DEDUCT.

	lbs.		
Board and Stock Boxes	21¼		
Bees' comb and pollen allow	9¼		
Surplus honey in spring, suppose	10	40½	
Net Body Honey		30	30
Total harvest			194¾

This colony was not sent to the heather, or even moved from its site in the apiary, or the result might have been considerably increased. The honey harvest terminated in this quarter by the middle of August, otherwise I have no doubt the yield would have been a weight of upwards of 200 lbs. As it was, this was decidedly the finest harvest from one colony ever reaped by

A RENFREWSHIRE BEE KEEPER.

Queries and Replies.

NOTICE.—*When queries on any subject are nearly synonomous, we only publish that which has required the fullest reply.*

QUERY No. 1.—Are those wooden, straw, or glass hives of any practical use to ordinary bee culturists.

J. F. H.

Bungay, Suffolk.

REPLY TO No 1.—Your query as to the practical use of the bar frame moveable comb hive to ordinary bee culturists we answer with a most direct affirmative, and whether made of wood or straw or a combination of both, with glass, matters little, if the way to manage bees be properly understood. The straw skep with its contents, was as it were a sealed book, or perhaps we ought to say like a page of hieroglyphics, full of awful mysteries, which many tried to decipher without having the true key, and until the hive was invaded, and the combs made moveable by poor blind Huber, very little of the mystery of the bee hive was known.

Dzierzon, in Germany, and Langstroth in America, simultaneously invented the bar frame hive, and the wonderful results obtained by its use in those countries through its giving complete command over the bees and comb in every part of the hive, and of every part of the hive itself, have so stimulated bee keepers there, that hundreds of bee farmers live entirely thereby, counting their honey results by tons.

We do not say that the bar frame hive will make the bees work harder, or gain more honey individually, but where the bar frames are interchangeable as they should be in every apiary, the facilities for uniting in Autumn, are so great and so easy of adoption that weak stocks ought to be unheard of, and in Spring, the division of stocks and multiplication of swarms is so easy that stocks in good order may be multiplied six or seven fold. ED.

QUERY NO. 2.—I have not touched any of the combs in my Woodbury hive since I bought them; ought they to be cleared out for the spring, or allowed to remain as they are? The original stock seems well, but in one hive which lately seemed thriving, the bees appear to be dying by hundreds. What is the cause of this? The hive is quite protected from the weather, being in a bee house. It is an improved cottage hive.

Oak Road, Woolston.

REPLY TO NO. 2.—If you have a second Woodbury hive you cannot do a kinder thing for your original bees than to transfer them to it, as by so doing you will have a first class opportunity of inspecting them, and can get the original hive cleaned up and repaired. The others in the neighbour hive are either suffering from dysentery or starvation. The latter can be remedied by giving food, and exchanging the floor board although if they have been so "pinched" as to "die by hundreds," there is little hope for them, as there can be comparatively no brood in the hive, and as none can be raised to hatch out under three weeks from the present time, there will be no recuperation of numbers, and they must continue to dwindle up to that period at least when their then present state must determine their future chances of prosperity.

If dysentery is the cause of death, you should exchange the floor board daily, and feed with barley sugar, placing it in heaps over the open ventilating or super holes at top, so that the bees can get up through it, and obtain ventilation, and food at once, without being able to fill the hive with liquid food which by its evaporation and condensation, may make matters worse. ED.

QUERY NO. 3.—DEAR SIR,—I am so pleased with your plucky idea of establishing a Bee Journal for old England, that I at once send you my subscription. It is an undoubted desideratum and your liberality in offering immediate replies to queries is such an extraordinary boon to amateurs and novices in bee keeping, that I prognosticate immense success will attend your undertaking, and I fear I shall become one of your most dreadful tormentors. I am now in this fix, my hives are all heavy, but three out of the five are almost tenantless, only having just a little knot of bees, each clustered on about three combs up in their hives, which are perfectly dry, but the combs look very black. My other two hives are last years swarms, and yielded some nice supers in the Autumn, but they are comparatively full of bees. We had some good supers from the stocks in question, and there seemed plenty of bees in Autumn, but now they seem to be dwindling away. Can you help me? They are all in straw skeps.

AMATEUR.

Gloster.

REPLY TO NO. 3.—Yours is not an uncommon case, but one seldom so quickly observed by an amateur. We judge your hives are pollen bound, and that your bees are suffering from deficiency of honey, through your removing the supers in autumn, and giving the bees nothing in return. You evidently judged them by their weight, and that alone is not a good criterion. Probably there is time to redeem the mischief caused by the error, and to render your doubtful hives good and valuable stocks. The remedy is feeding, and only by gentle continuous feeding may you hope to restore them. They are evidently overstocked with pollen, which, when stored, weighs heavily, but not having a good supply of honey, they have not been able to commence early breeding, and thus consume the superabundant pollen. Do not give them a large quantity of liquid food at once, or they will store it in the breeding cells in the centre of the hive, and leave no room for the deposition of the eggs by the queen, and in that case the remedy will be as bad as the disease. Half a pound of liquid food every evening for a week, then gradually increase it. Feed by means of the bottle as per sketch; * take care your zinc has fine perforations, and that it is perfectly level when fixed.

* A sketch of feeding bottle, as shewn in our engraving, page No. 5 was forwarded. ED.

QUERY NO. 4.—Can anyone inform me whether the small drones hatched in worker cells form the eggs produced by an unimpregnated queen are of any use in fertilizing queens? I asked this query last year in another journal, but did not get any satisfactory information. I should very much like to have the question decided, as it might prove of much importance in raising artificial queens LATE or EARLY.

S. B.

Knowle, near Birmingham.

REPLY TO NO. 4.—Your query is one which cannot be easily *decided*. The drones of a fertile worker, raised, as they usually are in worker cells, are supposed to be incapable of the act of fertilization, and some experienced apiarians think the degeneracy arises from their being stunted thereby, and if that is the cause, the drones you speak of might be in a similar predicament. We once forwarded to an experienced apiarian in our neighbourhood, a parcel of drones, the offspring of a pure unfertile Italian queen, and he united them to a stock which had accidentally lost its

queen in December, and which were then raising queen cells, and although the experiment was very interesting for the reasons you give, it was considered by him so certain to fail, that he did not open the stock again until February, when, to his astonishment, he found "heaps of brood," which, when hatched, proved purity of ferilization, and goes very far to prove the capability of the drones in question, but we must carefully avoid any dogmatic assertion in the matter, for it is possible that other hives in the neighbourhood contained drones of full size and power, and a fine warm day might have tempted them to fly abroad, as it must have tempted the queen in question.

If you have an unfertile queen, or intend to raise one for early breeding, why not confine her with a sufficiency of workers, to a hive containing only drone comb, so that her brood may attain full development?

You can then transfer her combs of eggs and brood to any or all of your deprived stocks, and so increase your chances of success. ED.

QUERIES NOS. 5 AND 6.—As an amateur bee master, I am much interested in all items of bee information, and shall be much obliged by a description of the Honey Slinger, which you have lately mentioned in the Journal of Horticulture. While not insensible to the wants accruing from bee keeping, I also take an interest in the matter, that I may do some little good among the people, with whom, as a minister of the gospel, I am brought into contact. I have six stocks of bees, and should like to ligurianise them. Which will be the best way?

D. W. P.

Fulford, Winchester.

The Honey Slinger Mel Extractor or Melipult, as the Machine is indiscriminately called, is described in another column, and repetition here would be tiresome. Ed.

REPLY TO NO. 6.—The best way to ligurianize bees in straw skeps is as follows:—Purchase a small swarm of bees with a Ligurian queen at their head, and upon getting them home drive out all the inhabitants of your strongest black stock by the usual process of drumming, supplemented by the use of a small quantity of chloroform, to clear the hive of the few remaining bees. Set the hive, which contains the driven bees on the stand, from which the full one was taken, that being their own stand, and leave them there as an artificial swarm. Carry the hive containing the combs to the stand which the Ligurians are to occupy, set it over the latter, and allow them to ascend and take possession of the combs, which they will readily do. Seven days after, the queen will have deposited thousands of eggs in the hive, and all the eggs of the black queen will have become too far advanced to convert into queens so that it will be quite safe to drive out as before all the bees of your Ligurian stock and also all the bees of your next strongest black stock, not forgetting to chloroform the few bees remaining in the hives after drumming, then take the hive belonging to the latter, and give it to the Italians on their own stand, and in like manner give the hive taken from the Italians, to the black swarm last driven, placing it on *their* own stand, but first take the very necessary precaution of removing the black queen. The black bees will then raise queen cells from the Italian brood in their hives while the Italians will be stocking their new hive with Italian brood, and at the end of another week will be in a condition to be again operated upon, and to have their hive again exchanged. These operations may be undertaken as soon as it will be safe for the first driven swarm to get their own living, and the earlier they are performed, the more likely it will be that a proper supply of Italian drones will be furnished. The great advantages of this mode of operation, if carefully performed, are that there is no risk of losing the queen, as there is in every other mode of introduction. All your first swarms will be headed by young Italian queens, and your old stocks will be likewise so furnished, and thus the whole apiary may be ligurianised in one season at a very small cost, and with very little trouble. The risk of losing the young queens on their wedding trips is not greater than under any other mode of ligurianising by the introduction of queen cells, and their chances of pure fertilization are not in any way more affected, and under any circumstances all their drones in the ensuing year will be pure, when a repetition of the performances will be attended with increased chances of success. It however, often happens that the cross in the breed caused by the introduction of Italian blood into apiary, gives such increased vigour to the bees, that further trouble and expense are not deemed necessary. ED.

QUERY NO. 7.—Is there any strong objection to the use of yellow deal or spruce fir, or woods of that kind, for the interior of hives, say for the frames, &c.? Does the smell offend the bees? Would it be likely to infect the honey?

E. T. GRAYS,

Essex.

REPLY TO QUERY NO. 7.—The only objections we know of to yellow deal or spruce fir are, their liability to warp and split under the variations of temperature, to which, in hives, they are subjected.

We cannot think the smell at all injurious to bees, as we have often seen bees carrying away the freshly made sawdust of those kinds. Dr. Bevan recommends cedar, and yet says also "that yellow deal answers the purpose very well," but stipulates that it must be well seasoned. We do not think the odour from any kind of wood will at all effect the honey deposited in the hives, as, before any honey can be deposited at all, the combs will have to be built, and the heat in the hive, thus caused, will have driven off all the volatile essence therefrom. ED.

QUERY NO. 8. My bees have begun working, and are carrying pollen freely. When shall I be able to transfer them to a bar-frame hive? I am feeding them on sugar candy, and have placed salt and water on their hive. The bar-frame hive is a large one.

ST. HELENS.

Lancashire.

REPLY TO NO. 8.—You had better wait until they have swarmed, and cast, *i.e.*, sent forth a second swarm before transferring. You should hive your swarm in your bar-frame hive, and when the cast comes off, which will be in about nine days afterwards, you may safely transfer the combs to some of the empty frames therein, giving the cast all the bees that were left in the hive among the combs. You will thus strengthen

your first swarm with the combs, and your second with the bees, and as the second will have a young queen you may rely upon her as a prolific one if she returns in safety from her wedding tour. Feed gently and continuously with syrup, now that the weather is mild and open, and keep on until fruit trees blossom. ED.

QUERY No. 9.—I shall be much obliged by your informing me, at your earliest convenience, of the best plan of working my bar-frame hives, which contain black bees, so as to give them Ligurian queens, and likewise get the greatest amount of honey, either in supers or with another hive placed on the top of the old stock? Our honey season here is generally over by the end of July. Would it be well to let them stand over until after that for ligurianizing?

JOHN WALTON.

Weston, near Leamington, March 26, 1873.

REPLY TO No. 9.—Your black bees being in bar-frame hives the process of ligurianizing is easy. It is usual to recommend the purchase and introduction of a fertile Ligurian queen into the strongest stock of black bees as a commencement, but as that proceeding is attended with considerable danger to the queen, and, (unless in the hands of an expert, is nearly always a failure, entailing loss and disappointment) we recommend the following mode in preference to all others, as, if conducted with ordinary care, it is sure to be successful.

Procure a small swarm with a pure Ligurian queen at their head, and such a swarm of 2,000 or 3,000 bees ought not to cost more than the price of two queens; and take from amongst your healthy black stocks three or four frames filled with sealed brood, but without bees, and as many others without brood as will fill one of your hives into which admit your Ligurian swarm.

In a week or little more, they will be much strengthened by the addition of the black bees, which will have hatched out of the sealed combs given to them, and the queen will have deposited hundreds of eggs in all of them. You must then make an artificial swarm from one of your strongest stocks, but instead of allowing the bees remaining in the driven hive to raise queen cells from their own brood, the brood of the Ligurian queen must be substituted for it. For this purpose both hives must be open at one time, and all the combs, quite free from bees, exchanged *seriatim*, care being taken to place them in their proper places in their new hives. By this transfer of the full combs of the black bees to the hive inhabited by the Ligurians, the latter will become a first rate established stock, which, in its turn, will swarm naturally; and the black bees having the Ligurian brood to raise queen cells from, and not having more than they can well take care of, will probably raise a large number of queen cells, which may be utilized in the following way:—

As soon as you know the number of queen cells being raised, which will be about five days after the making of the artificial swarm, you must deprive as many of your black stocks of their queens, as there are removeable queen cells, allowing for one to remain in the hive. You must use your own discretion as to whether you will make artificial swarms or not when you remove your black queens, but as your object seems to be the obtaining honey, we suggest that they should be destroyed. Two days after depriving the black stocks of their queens, which will be seven days after the artificial swarm was made, the spare Ligurian sealed queen cells should be cut out, and one inserted in each of the respective black stocks deprived.

It is of considerable importance that two days should be allowed to elapse in these cases, especially after making artificial swarms, as many young bees will be added to the stock, and the necessity for the queen will be all the more felt by the bees remaining in the hive after the driving, and they will not be likely to destroy the queen cell.

To get the greatest amount of honey, it is necessary to have your stocks strong at the time honey is most abundant, and as you seem to know that time, by all means prepare for it; stimulate your bees to the utmost, by feeding gently and continuously, and when *the time* arrives. give your strong stocks increased strength by removing honey combs and giving combs of brood from your weaker stocks. One stock so built up will pay better than four middling ones, and the latter will build themselves up for the ensuing winter.

Your object in ligurianizing being the improvement of your apiary, why delay it until the improvement will be of little service? Ligurian bees being so much better workers than the black bees, we think it would be far wiser to introduce them before the work begins. ED.

QUERY No. 10 AND 11.—Our season is always late here. We have very severe winters, and abundance of snow, and until last week the country has been more or less covered with it. Now however, our bees are beginning to stir, but if the weather continues fine, we shall be late in swarming, as usual. We seldom get a swarm in May, but generally in June, and often past the middle of the month. Our crop of honey is seldom more than from 15 to 20 lbs., and its harvest is usually over about the 12th of August. Taking these things into consideration, do you think it would be advisable to introduce the Ligurian bees here, and is there any hope for a return for the outlay? Also, do you prefer the Woodbury box hive or the straw skep? I prefer the skep.

J. PETYT.

Blubberhouses, Otley, March 26, 1873.

REPLY TO QUERIES No. 10 AND 11.—Ligurian bees, being natives of the Italian and Swiss Alps, are much hardier than English bees, and breed much faster, consequently we should think their introduction to your neighbourhood greatly to be desired. They are not only more prolific than the common bee, but they are also better workers, and when the season is late and short as you describe, we think they would be invaluable.

As regards hives, good results may be obtained from almost any kind, provided they are large enough, but as the bar-frame hive permits the full control of all the combs and bees, and every part of the hive itself, it is much preferred by skilful apiarians. ED.

SCALE OF CHARGES FOR ADVERTISEMENTS.

	£	s.	d.
Two lines of twelve words each	0	1	6
Per line afterwards	0	0	6
,, Inch of Space	0	5	0
,, Quarter column	0	10	6
,, Half ditto, or quarter page	1	0	0
,, Column, or half page	1	15	0
Full page	3	0	0

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THE

British Bee Journal,

AND BEE KEEPER'S ADVISER.

CONDUCTED BY CHARLES NASH ABBOTT, BEE-MASTER, HANWELL, W. LONDON.

Guarantees to its Subscribers sound practical replies to all queries on Bee Management, and in urgent cases of difficulty, immediate replies by post or telegraph if desired.

ANNUAL SUBSCRIPTION, HALF-A-GUINEA, Payable in Advance.

Special Terms to Clubs and Literary Institutions. *Free by Post on day of Publication.*

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DIRECTIONS TO CORRESPONDENTS & QUERISTS.

1.—Write in a legible hand on one side of the paper only.

2.—Use no abbreviations which are not to appear in print.

3.—Keep every query distinct and separate, and give the fullest possible particulars, stating also the kind of hive used.

4.—When requiring an immediate reply, send a stamped ADDRESSED *envelope, or stamps for cost of telegram.*

The British Bee Journal.

JUNE, 1873.

Our go-ahead correspondent "Novice," while acknowledging the value of "Our own Journal," as he, on behalf of bee keepers, is pleased to term it, throws out suggestions which appear to lay upon us the duty of enforcing the attention of bee keepers to their own interests by further appealing to them with the offer of gifts or prizes to those who most promote its circulation.

We think such a stimulus ought to be unnecessary, and hesitate before committing ourselves to any course which may be construed into weakness on our part, or want of faith in the spirit which is now awakened among bee culturists.

We endorse his opinion that it is *the positive duty* of all who have bee culture at heart, to do all in their power to enlighten their neighbours, and advance the charming and profitable pursuit in every possible way, and that many have been, and are really willing to do so, the existence of this "Journal" as an *Established Magazine*, sufficiently proves; as only by private exertion has its circulation been procured. But we go farther than this and say that every one holding a position which will enable him to further the interests of his poorer neighbours, by urging upon them the cultivation of bees as a means of increasing their resources, has a duty to perform which he ought not to neglect, not only for their sake individually, but as a powerful means of developing and increasing the wealth of the country at large.

"A land flowing with milk and honey" was the promised reward of the Israelites of old, after their long sojourn in the wilderness, and how eagerly they looked forward to, and longed for its possession, is matter of Sacred History: but while we actually possess such a land, we allow one half its richest treasure to be wasted, with scarcely an attempt to utilize it.

Our forests, our plains, our fields, orchards, gardens, hedge-rows, and even our way-sides teem with flowers and blossoms in their several seasons, yielding abundance of delicious nectar, which is allowed to waste its sweetness, and thousands of tons of honey are thus annually lost in this country through there being insufficient bees to collect it.

Unlike other stock, bees may ordinarily be cultivated without any expense for food or hired labour, and except the cost of new domiciles as they increase, they really require no further outlay when once established *under a proper system of management*, and they will yield an average of profit to the value of at least 100 per cent. per annum on the original cost of their establishment.

Why then are not bees more cultivated in this country, and why has not every allotment, from the limited gardens of cottagers, to the wide domains of the noblemen and agriculturists of the great garden of

England, its proportionate apiary?—Why should we as a nation, annually expend thousands of pounds in the importation of hundreds of tons of honey and wax, when we have them at our very doors if we will only use the proper means for collecting them?

The answer is that bee culture is not understood as it should be; it has been systematically neglected, and as shewn by our esteemed correspondent, "Novice," is a subject on which in many parts of this otherwise enlightened nation, almost heathen ignorance prevails, and bee keepers actually destroy their own wealth producers. Other correspondents, (and they are all gentlemen of high education and position, whose testimony cannot be doubted,) record experiences which to many seem too wonderful to be true, but which, from our own experience, and from their high character we undertake to say are strictly correct, and capable of repetition, and when we find "A Renfrewshire Bee Keeper," and there are many others willing to do the same, volunteering to set forth in this Journal the system of management, which has procured such pleasing results as are recorded by him in the May number of this Journal, thus forming centres of intelligence, from which may be drawn instruction suited to the wants of the bee keepers around them. We are constrained to believe that such teachings should have the widest possible scope, and their influence pushed to the farthest consistent extreme. The chief obstacles in the way of this dissemination of knowledge of bees are the general apathy of the bee keepers themselves, and the difficulty of obtaining access to them, and only by the continued direct personal efforts of a gentlemen of influence, can we hope that any useful impression will be made.

Local bee clubs, under intelligent direction, would do much to advance scientific bee culture, and formed in connection with Literary Institutions, Benefit Clubs, Mutual Improvement Societies, or Working Mens' Institutes, would form aggregations of individuals, among whom a spirit of rivalry might be created, which if fostered, would lead to most beneficial results, and having this in view, we on our first page offered "Special terms to Clubs and Literary Institutions."

We think we should best stimulate bee keeping in a general way by offering special inducements for the formation of such clubs or associations, and this we think might be done without offending the dignity of any gentlemen who are, or who may become subscribers to our Journal, if we offer a series of premiums which we hope will tend to induce their establishment.

Our Somersetshire correspondent whose letter we insert as a specimen from among many others suggests an idea that there are some who would gladly become readers of the Journal if it was brought within their means, and we think the formation of clubs as suggested, would do this at a trifling cost, but with very great advantage to each and every member.

We therefore offer and promise

That every such club sending us three subscriptions, shall receive six copies of our Journal, monthly, and shall receive a new and well made Woodbury bar frame moveable comb hive as a club pattern, or a pure imported Ligurian queen bee, as may be elected.

Every such club sending six subscriptions shall receive 12 copies of the Journal monthly, and a full set of the far-famed Stewarton Hive Boxes, or a Cottage Woodbury, complete, as advertised, as club patterns, or if preferred, two pure imported Ligurian Queens for the improvement of their apiaries.

Every such club as shall send 12 subscriptions shall receive 24 copies of the Journal monthly, and a Woodbury Bee House, or set of Stewarton Hive Boxes, charged with a full swarm of bees with a pure Italian mother as their Sovereign.

While we thus open up a wide field for exertion, which we hope will be extensively used, we trust our object will not be misunderstood or improperly taken advantage of. Our most earnest desire is so to extend a knowledge of bee culture in this country that it may become a branch of industry worthy of recognition by all classes. We believe the formation of bee clubs to be most important, we offer all the aid we can afford, and we trust that gentlemen who have influence in their respective localities will go and do likewise.

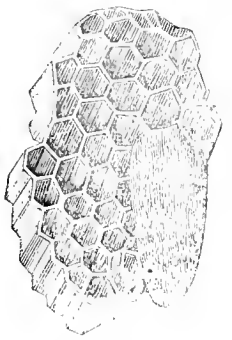
We cannot, however, undertake to correspond with all the members of such clubs, but the presidents or secretaries we shall be happy to treat as subscribers.

THE CELLS.

Having given a description of the Worker, Drone, and intermediate cells, we next come to the queen cell, which is totally unlike the nursery of a subject whether drone or worker, and is generally found on the edge of a comb.

It is much larger than the ordinary cell, and is built with a lavish expenditure of wax, which affords a curious contrast to the rigid economy observed in the construction of the other cells. The little larva which is placed or hatched in the royal cell is not fed with the

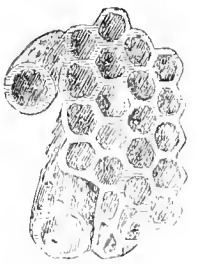
same food as that supplied to those which become drones or workers, but lives upon an entirely different diet, apparently of a more stimulating character, and it is now well known that although the egg may have been deposited and the larva hatched in a worker cell, yet if placed in a royal cell, and supplied with royal food, it will develope into a perfect queen, which in time will rule and populate the hive.



QUEEN CELL.

Queen cells, when completed, appear like excrescences on the sides or edges of the combs, they are somewhat like acorns, drooping and tapering, as shewn in engraving, and are sealed at the ends with a porous mixture of wax and pollen, which permits free respiration to the queens confined in them.

When a queen is about to emerge naturally into life, she partly cuts away the porous end of her cell with her mandibles, and forces her way out, leaving a little flap at the end like the top of a thimble, but eventually the bees remove the greater portion of the whole, leaving the cell pretty much like an acorn cup only, as shewn in illustration.



OLD QUEEN CELL.

Queen cells are said by many writers to be always on the edges of the combs, and in all cases where swarming is being prepared for naturally, it is nearly correct, for the simple reason that all the other parts of the comb are filled with brood or stores, and as the bees require sufficient room between the nursery combs to pass each other back to back, it is evident that queen cells cannot be formed there without space being purposely made for them, the doing of which would involve the destruction of numerous cells o brood. The fact then that queen cells are usually placed on the outer and lower edges of the combs at a time when all the other available parts contain brood in various stages, should be well thought of by amateur bee keepers as a reason why many stocks which have swarmed fail in obtaining young queens, for if after the swarm has left the hive, the weather should become cold enough to make it necessary for the bees left in the hive to draw up into the combs for mutual warmth and protection, the queen cells would be abandoned, and the young queens perish. This is also a reason why supers should not be placed on hives immediately after bees have swarmed, as the additional space thereby given by permitting the escape of the heat from the body of the hive might lead to the same evil result.

Although the primary object of the bee cell is to serve as a store house and nursery it is also made to answer other purposes.

When the bee seeks repose it almost invariably creeps into a cell and buries itself deep therein, the whole head, thorax, and part of the abdomen being hidden. If a hive be examined in the winter time, every cell in the centre of the hive which contains nothing else will be tenanted by a bee, and when the poor insects are put to death by the cruel and cruel plan of smoking them with the fumes of sulphur, they will be found to have vainly sought escape from the suffocating vapour by forcing themselves into the recesses of the otherwise empty cells, and alas! making their cradles also their graves.

As a general fact the bees store their honey in the outermost or coolest parts of the hive, and reserve the central or warmest part for the production of their brood, and this fact is taken advantage of by bee keepers, who place glass, wooden or other receptacles, upon or around the hive, so that while the central or warmest part is filled with brood, the bees may store their superabundant honey in them.

With this fact prominently before us, does it not seem imperative that in order to obtain the largest quantity of honey in its purest form, the central or breeding apartment (usually called the stock hive), should be as nearly as possible of the exact size suitable for their breeding capacity only, or can there be easy adjustment to that end?

The chief point which distinguishes the comb of the hive bee from that of any other insect, is the manner in which the cells are arranged in a double series

The combs of the wasp and the hornet are arranged horizontally, so that their cells are vertical, but with the hive bee the cells are laid nearly horizontally, and in a double series just as if two rows of thimbles were laid on a table with the points of the thimbles in one row touching between the points of those in the other. There is another point which must now be examined. If the bases of the cells were to be rounded like those of thimbles, it is clear that either they would have but little adhesion to each other, or that a large amount of material would be used in their construction to obviate which, it would appear necessary to place at the base of each cell a hexagonal flat plate as is actually done by the wasp. If, however, we look at a perfect piece of honey comb, we shall find that no such arrange- is employed, but that the bottom of each cell is formed into a kind of three-sided cup. Now, if we break away the walls of a perfect cell so as only to leave the base, we shall see that each cup consists of three lozenge shaped plates of wax, all the lozenges being exactly alike.

If a cell be isolated, it will be seen that its six sides rise from the outer edges of the three lozenges forming the cup above mentioned, and that its transverse section gives a perfect hexagon. Many years ago Miraldi being struck with the fact that the lozenge shaped plates always had the same angles, took the trouble to measure them, and found that in each lozenge, the larger angles measured 109° 28', and the smaller 70° 32', the two together making 180°, the equivalent of two right angles. He also noted the fact that the apex of the three sided cup was formed by the union of three of the greater angles.

Some time afterwards, Reaumur thinking that this remarkable uniformity of angle might have some connection with the wonderful economy of space which is observable in the bee comb, hit upon a very ingenious plan for its elucidation.

Without mentioning his reasons for the question he asked Koenig the Mathematician, to make the following calculation: Given a hexagonal vessel, terminated by three lozenge shaped plates at what angles would they give the greatest amount of space with the use of the smallest possible amount of material?

Koenig made the calculation, and found that the angles were 109° 26', and 70° 34', almost precisely corresponding with the measurements of Miraldi. Reaumur, on receiving this answer, concluded that the bee had very nearly solved the difficult mathematicial problem, the difference between the measurement and the calculation being so small as to be practically negatived in the construction of so small an object as the bee cell. Mathematicians were naturally delighted at the result of the investigation, for it showed how beautifully practical science could be aided by theoretical knowledge, and the construction of the bee cell became a famous problem in the economy of nature. In comparison with the honey, which the cell is intended to contain, the wax is a rare and costly substance, secreted in very small quantities, and requiring much time for its production. It is therefore essential that the quantity of wax employed in making the comb should be as little, and that of the honey contained in it as great as possible.

For a long time these statements remained uncontroverted, as any one with the proper instruments could measure the angles for himself, and the calculations of a mathematician like Koenig could hardly be questioned. However, Maclaurin, the well-known Scotch Mathematician, was not satisfied. The two results very nearly agreed with each other, but did not quite do so, and he felt that in a mathematical question precision was a necessity, so he tried the whole question himself, and found Miraldi's measurements correct, viz., 109° 28 and 70° 32'.

He then set to work at the problem, which was worked out by Koenig, and found that the true theoretical angles were 109° 28' and 70° 32', precisely corresponding with the actual measurements of the bee cell. Another question now arose. How did this discrepancy occur? How could so profound a mathematician as Koenig make a mistake? On investigation it was found that no blame was attached to Koenig, but that the error lay in the book of logarithms, which he had used. Thus in a mathematical work was accidentally discovered in measuring the angles of a bee cell, a mistake sufficiently great to have caused the loss of a ship, whose captain happened to use a copy of the same logarithmic tables for calculating his whereabouts on the ocean.

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SWARMING.

When the dangers of winter are safely passed, and spring is approaching, a stock well supplied with food, will begin to increase its numbers, and as the days lengthen, and the power of the sun's rays increases, so will also increase the activity and bustle in the hive.

The first deposition of eggs is made in the warmest

part of the hive, which is not always in the exact centre, as many suppose, but is in the centre of the congregated bees, wherever they may happen to be, and there the queen begins by placing a few eggs in the cells on each side of a comb, perhaps occupying not more space than a halfpenny would hide, but the circle is increased day by day, other combs are gradually occupied, and the mass widens and lengthens daily in increasing proportion, until in a short time every available cell in the hive is charged with eggs and brood in all stages of development. Twenty one days from the date of the first egg being deposited, the young bees will begin to hatch out, and if the stock be in a healthy condition, bees will continue to hatch at exactly the rate per diem at which the eggs were deposited, and as the ovipositing increased in proportion from its commencement, until from two to three thousand eggs were laid in every twenty four hours, it will be easy to understand how a hive, in which bees are so rapidly produced, can spare from 12,000 to 20,000 bees to form a swarm, and yet in a few days be as populous as before they issued.

When a stock increases thus rapidly, unless the hive be large, it is evident that the bees will soon become overcrowded, and unless more space be given to them either by adding a nadir, super, or collateral receptacle, they will of necessity swarm out and form a new colony.

Giving increased space does not always prevent swarming, although it lessens the probability of it, and those who depend on what is called the non-swarming system often suffer vexatious disappointment.

Swarms will sometimes issue from the largest hives, and bees, which have made their abode in the roofs of houses, where the space has been comparatively unlimited, have been known occasionally to send out swarms.

The swarming season is always a most exciting and anxious one with bee keepers, whether the apiary be conducted upon the swarming or non-swarming principle. As before stated, if swarms be desired, artificial swarming, as described on page 7, is by far the best and safest, as by adopting that method of increase there is little chance of losing the bees, and much valuable time is saved, which would otherwise be wasted in watching them. There is, however, something so charming in the exodus of bees from their hive to found a new colony, that many allow them to remain idle while the first honey season, which is really of most vital importance to bee keepers, passes profitless away, rather than not witness the interesting phenomenon. It is a great truth that nature's ways are the best, and ought always to be most closely followed, but it must be borne in mind that bees kept for profit are not in a state of nature, consequently the argument can no more apply to them, than to other kinds of stock kept with a similar object, whether they be cattle, pigs, poultry, or rabbits, all of which are likewise cultivated artificially, and while we follow the dictates of nature as far as is possible under the various conditions to which we subject them, we yet acknowledge that without proper management, little profit can be expected, and in bee culture the same principles are highly essential. In a state of nature bees lay by their superfluous stores for future use, and generally accumulate large quantities of both honey and pollen, and are thus able to withstand the ill effects of an unfavourable season, however prolonged it may happen to be, but when *cultivated*, they are forced to deposit their honey in receptacles specially prepared for the purpose, to be removed for the use of man.

The natural swarming of bees is a phenomenon which cannot always be readily accounted for. It is usual to ascribe it to overcrowding or overheating, but swarming takes place under so many varied and opposite conditions that it is quite impossible to lay down rules by which an amateur may be guided as to when a swarm will rise. Many writers say that the preparation for swarming may be discovered by the presence of queen cells in the hive, and doubtless the raising of queen cells, if observed, is generally a correct warning, but bees often swarm without there being a sign of a new queen cell in the hive. The rule, however, of queen cells has been so long thought infallible, that possibly swarming without their having been prepared may be considered an *unnatural* proceeding the result of causes probably unobserved.

Some writers recommend that swarms should be placed on the stands, in the place of the old stocks from which they emerged, but we do not recommend that mode of procedure with natural swarms.

This brings us to a point on which an immense deal of discussion has taken place, and which even now to many well-informed bee keepers is a matter of doubt, often leading to grave errors in the management of their apiaries. We allude to the drones, "the lazy yawning drones," as Shakspeare calls them.

It is well understood that swarms of bees do not issue naturally until drones are plentiful, and this has

been considered a wise provision of nature intended to secure ample means of fertilization for the young queens succeeding, but without any reference to their value in other respects. With a natural swarm almost every worker bee capable of taking wing, leaves the hive, and if it be examined immediately afterwards, it will be found to be tenanted almost entirely by drones. A few workers absent during the swarming, will probably return to the parent hive, but the majority carried away by the hum of the jubilant multitude, are certain to join the swarm, as may easily be ascertained by examining the cluster, which will be found to contain many hundreds of pollen laden bees; and many more may be seen to join it.

A few drones may be found among the cluster, but as they are *not required* in the new habitation, they will return to the parent hive afterwards, or if the swarm has been removed to too great a distance, will be compelled to huddle together on the floor board, until they starve to death.

The parent hive thus being left comparatively without working bees, and the drones knowing no other locality, if the swarm be stood in the place of the stock from which it emerged, all the drones and the workers, which have flown, will desert the latter, leaving it almost tenantless, and possibly causing the loss of a considerable quantity of the brood which it contains.

Well may it be said that this mode of procedure *prevents* the issue of after swarms. In artificial swarming a similar result is not brought about as if performed with proper judgment, sufficient bees will be left in the old stock to hatch out the brood but the drones will eventually perish in their new honeyless abode.

We maintain, therefore, notwithstanding the abuse which has been heaped upon the heads of these

"Lazy fathers of the industrious hive."

that they have a far greater value than has usually been attributed to them, for that, in addition to their usefulness when flying abroad, their presence at home as heat producers, under the conditions named, is of the highest importance to the future well-being of the colony to which they belong.

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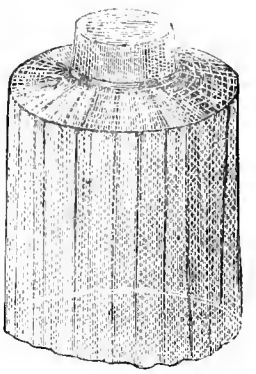
BEE STINGS.

The great hindrance to bee culture is the fear of the sting of the useful little insect, whose sweets we so much desire to possess, and we are requested by several correspondents to suggest remedies for the painful vengeance which they inflict. We, however, point to an old proverb; and say, "prevention is better than cure," and recommend every bee keeper who has any fear of stings, to wear a protecting head dress and gloves. This head gear need only be of the simplest construction, a common garden hat with leno crape or black net, about half a yard wide, sewn round the edge of the brim, forms an excellent protection, and buttoned under a coat, fastened under a shawl, or tied under the chin is almost unequalled. It may be easily removed, and when not in use the protecting material may be folded into the crown of the hat, which may be then worn in the usual way. For those whose apiaries are divided by distance, a kind of bag without a bottom, but with elastic run into its top hem forms a very useful veil. In use it should be slipped over the crown of the ordinary hat, and allowed to fall round the head, and may be buttoned down under the coat or tied under the chin. The chief advantage of the latter is that it may be easily carried in the pocket, as it will occupy no more room than a silk handkerchief. The front of a bee veil should be black as it is much more easily seen through, and all the other part white, as being less likely to attract the bees to its wearer than a coloured material.



BEE HAT AND VEIL.

For protecting the hands, india rubber gloves are generally recommended as being impervious to the stings of bees, but sometimes they sting through even them. Their supposed imperviousness is looked upon as constituting their greatest value, as it is said that as bees cannot get their stings into them, there is little danger of their perishing through losing them by so doing. We, however, know that bees can and sometimes do sting through them, although we believe they greatly dislike the material, and do not willingly try to sting it at all. Stout hard leather gloves are the best *protection*, and are the most comfortable to wear, as they permit the free perspiration of the hands. Bees, however, frequently sting them, and as every bee that

so uses his sting speedily loses his life, the bee keeper should take all necessary precautions against such a very useless waste of bees, and setting one fact against the other, we cannot recommend anything better than india rubber gloves for use in an apiary, but suggest that they be worn over others of a woollen texture, so that while the danger of stinging through them may be lessened, the free perspiration of the hands may be less interfered with. Of whatever material the gloves are made, they should always have a sufficiency of gauntlet to cover the wrist, and prevent bees crawling under the sleeve, where, if subjected to even a slight pressure, they will surely sting either the clothing or the arm. Remedies for stings are plentiful enough, but we know of nothing which will immediately neutralise the painful effect of a sting in a tender subject. In our own experience we have found that each sting we get makes the next easier to bear, until the poison has nearly lost its power over us, but as few are so hardened we append a few remedies which are said to be useful in allaying the pain and inflammation.

1.—In all cases remove the sting as quickly as possible, then apply the spirit of sal volatile to the part, pressing a small key pipe on the aperture, so as to force out as much of the poison as possible before it is taken up by the system, then keep the part cool with wet rag, and take care not to rub it at all.

2.—Tobacco juice is considered an excellent remedy. Moisten a bit of tobacco with the saliva, take it between the finger and thumb, and rub it hard into the part.

3.—Bathe the wound with choloform.

4.—In cases of severe stinging spirit of sal volatile taken internally is highly beneficial.

5.—Prick the part with a needle and squeeze it until blood and a clear liquid are expressed.

6.—Rub the part with a laundry blue bag or with common washing soda.

7.—One funny remedy is to catch another bee and make it sting you on the same spot.

This last we believe is a remedy recommended by an English Bee Master.

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WHAT TO DO, AND WHEN AND HOW TO DO IT.

—o—

June is generally a busy month in the apiary, and usually affords reasonable data from which to calculate the honey prospects of the year.

"No honey in June, no honey," is a very old saying, and under the let alone system of management, which simply implies no management at all, the saying became a truism. If let alone when once established there need be little fear but that the bees will fulfil the purposes of their existence; like careful husbandmen they store their surplus for future use, and did we not rob them of it, they would doubtless be fully able to withstand the average inclemency of succeeding years as they usually do in a state of nature. As, however, we annually deprive them of their surplus wealth in autumn, by which we mean, every ounce of honey which we do not consider necessary to enable them to tide over the rigours of each coming winter, we ought not to forget that a cold ungenial spring may reduce them to the verge of necessity and famine, and render them physically unfit to prepare for the winter next ensuing. A cold spring is more to be dreaded by the apiarian than the coldest winter, as during the latter the bees remain inactive and suffer little loss, but if the weather continues cold and unseasonable during the period when they should be breeding most rapidly, and prevents the proper increase of their numbers, and the beekeeper continues to *let them alone*, there can be little hope of profit, as when the later honey season arrives there will be but few bees to take advantge of it. It therefore behoves every one who wishes to see his apiary prosperous, to take care that during the breeding season his bees are fully supplied with all that is necessary to secure large working populations in his hives, that they may be *ready* for the good time coming. May and June are the principal breeding months of the year and swarming is then most common, yet in those months stocks and swarms often perish or become so crippled by a few days of inclement weather as to be comparatively useless. We therefore again advise all bee keepers to feed both stocks and swarms on every day when they cannot obtain food for themselves.

SUPERING.

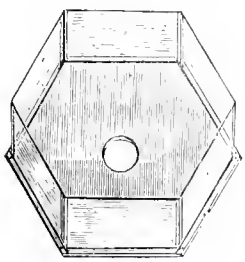
Next to swarming, supering is, perhaps, the most important proceeding in the apiary, and as the supers are usually made partly, if not wholly, of glass, through which the operations of the bees may be observed, the process of filling them affords intense interest and gratification.

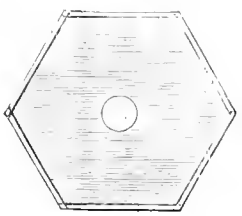
We strongly recommend that all supers be furnished with bottom boards of their own, so that they may be removed intact. The board need not be thicker than a stout card, and needs no care in fastening it to the super, but should be furnished with holes or slits, corresponding with those in the honey board. When used, the bees will be unable to attach the honey combs in the super to the honey board as they usually do, and when filled it may be removed without danger by inserting two plates of tin or zinc between the honey board and the bottom of the super, one of which will confine the bees in the hive, and the other will enable the operator to remove it with impunity. The use of the bottom board with supers offers other advantages: in enabling the bee keeper to fix pieces of attractive comb upon them instead of attaching them to the tops of the supers, which, if of glass, are often disfigured by the melted wax used in the process, and by rendering the fall of the combs, so placed upon it, be provided proper cushion to rest on. If the combs do the work, supers at [illegible] other so that when the super is placed over them it shall touch and slightly crush them together, and thus

state of things will ensure the immediate attention of the bees. They permit no portions of comb to remain insecure and will be almost sure to go up and fix them at once. It does not matter how irregularly they are placed, provided they are set right way upwards, the bees will finish them off, and make of a seemingly useless pile of scraps, a beautiful rock work of honey comb.

Considerable judgment is required in selecting supers of sizes suited to the capabilities of the various stocks. It is well understood that bees will take possession of a moderate sized super more readily than they will a large one, and it is better to have such a one quite filled with honey than to cause waste of it in the manufacture of combs, which the bees will not be able to fill. Supers, if of glass, require much protection as bees are most susceptible of cold, and a sudden chill will often cause them to leave their work in a body and descend to the hive; they should, therefore, be covered with a cozey, such as is used to keep a teapot warm, which may be made of old flannel, carpet, felt, or baize. Glass supers are, undoubtedly, very beautiful objects to feast the eyes upon, but when the honey is required in the comb for table purposes it is not at all easy to get it out of them in a presentable condition, and at the first breaking of the cells the running honey spoils all their beauty. Without wishing to dictate, we venture to suggest that supers should be constructed so that they may be taken to pieces when filled, and the honey easily cut out for use.

They may be made either square, hexagonal, or octagonal, of wood and glass.





Take two pieces of thin board of the size and shape determined on, and cut saw grooves halfway through, about a quarter of an inch from each of their sides respectively. Fit plates of glass in one of them, which we will call the bottom, so as to touch at the points of intersection of the saw grooves, and bind the whole of them together with a strip of gummed paper round the outside of the top edges.

The glass should not be more than about four or four and a half inches deep, but some supers should be made of much narrower dimensions so as to be available as ekes when the larger sizes are filled. The edges of the plates of glass should be rendered air tight by strips of gummed paper fixed over them, giving the super, as shown in the engraving, the appearance of being supported by columns at each of its angles. In this state, with the bottom board duly perforated, the super is ready for the reception of the *attraction combs*, which being supplied, the cover which is the counterpart of the bottom may be placed on the whole, and the super will be fit for use.

This kind of super has many advantages among the most important of which simplicity and cheapness claim prominence. Bar supers offer no advantages which it does not possess, as its top and bottom being of such thin material, the combs may be cut out by cutting through the wood along the passages between them, so that it is really of no consequence how crooked the bees may happen to build them. For protection against cold a sheet of folded paper bound round the glass will be ample, or it may be put on as a bandage, and the end fastened with gum, shutters being cut in it on the sides to permit observation. If one of the sides of such a super be made of thin wood, and an aperture cut in it so that a bee trap may be affixed, when the super is filled, it will only be necessary to slide the latter a little on one side, so that the aperture in the honey board and super bottom do not correspond, to ensure its desertion by the bees, for as they will be unable to go down into the hive, they will speedily make their exit through the trap, but will be quite unable to return.

Transferring.

Among the most important operations which are likely to demand the attention of the amateur in bee keeping, is the transferring the contents of a straw skep or common box hive, to a bar frame moveable comb hive.

The best time to do this in summer, is when the combs contain the least quantity of brood, as then they will be light, and more easily supported, and there will be less liability to loss or injury than when filled with brood in all stages of development. The combs will be lightest about 16 days after swarming, as a great majority of the brood from the eggs of the old Queen will have hatched out of the cells and the young Queen will have only just begun to deposit eggs, and this offers a very good opportunity to effect the transfer.

We, however, recommend the autumn as the best time for effecting this object for several reasons; first because obtaining a super, small though it may be, after the swarm and cast have issued, is rendered almost impossible, as so much more space would thereby be given that the bees would be fully occupied in filling it. Second because in filling up the hive in the height of the honey season they would probably build too much drone comb. Third—because by transferring in autumn the opportunity is offered of absorbing weak stocks by uniting them with others.

Those who are in the habit of destroying bees in autumn, to obtain their honey, should consider deeply whether the outlay of a few shillings then for a bar-frame hive would not be well repaid by its possession filled with a stock of bees in spring, which would be of greater value than any other two left in their apiaries which have been left in straw skeps.

Every three or four stocks of bees contain in Autumn sufficient comb without honey to stock a bar frame hive, and when it is considered that the greater part of it is filled with either brood or pollen, we appeal to the common sense of our readers whether it would not be wiser to utilize it in the manner suggested than to crush all together to contaminate what is called *fine run honey*.

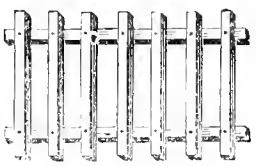
The wilful destruction of bees is so wantonly inhuman and cruel, that we can scarcely find words to express our abhorrence of the disgraceful practice.

In the present enlightened age it is positively indefensible, and we appeal to all who have any influence over those who are guilty of such BASE INGRATITUDE, *to exercise their power to the utmost to preserve the lives of these most useful insects.*

The process of transferring is a simple one, and may be performed with little trouble and no expense beyond the cost of the bar frame hive, and that may be made for a trifling outlay when the pattern has been obtained.

The necessary requirements are a room to which the bees have not access, a table, a large dish to catch any running honey, a little wooden grating (as per sketch) to lay on the dish a few pieces of lath rather longer than the frames are wide, a few stout pins or fine nails, about 1½ inches long (zinc slate nails do exceedingly well), a fine brad awl, a sharp knife, a few yards of tape, (tailors stay tape being fine and strong is excellent for the purpose) a few old wine corks, and the bar frame hive.

a



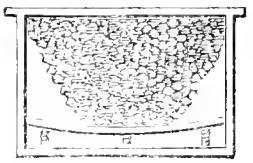
When everything is ready, drive the bees as directed on page 7, into another skep, and place them on their old stand. Clear the hive of the few remaining, unwilling to leave their combs with a little chloroform. To do this, make a hole in the ground close by the stand, put the towel or wrapper used in the driving operation into it, pour on that about a third of an ounce of chloroform, and set the hive over until they have tumbled out, when the hive may be carried to the closed room.

Cutting out the combs is usually considered difficult, but we recommend that the skep be first cut bodily in two between them, this of course will destroy it, but old skeps have no value, and the sooner they are burned, the better it will be for the apiary, as they cannot then form nurseries for the wax moth.

Having cut out one of the combs, place it on the wooden grating, apply the frame, and if the comb be too large to be easily crowded in, cut it square along the upper side, so as to remove the heavy part containing the honey, and to give the greatest length of attachment to the top bar of the frame. The part cut off containing the honey will drop through the grating into the dish, but the main body of the comb must be fixed in the frame, and this may be done either with the nails or pins, or by tying tapes round both the frame and the comb. If by any accident the comb has been cut rather too small, the tapes will be better, as they will, if tightly tied, bend the bottom rail of the frame slightly upward, thereby pressing the comb more closely to the top bar, which is of the greatest importance, as if not fixed there, it will be apt to fall in a heap when the tapes are removed.

If the combs be not of sufficient depth to reach the bottom rail of the bar, one of the pieces of light bath should be sprung in under it, to support it, the two ends of the lath touching the sides of the frame, when they should be supported by corks, cut to the proper height, as shewn in illustration.

b



When the combs are fitted to the frames they should be raised to a perpendicular position by lifting the wooden grating, with the frame on it, so that the comb may not drop out by its own weight, as might be the case, if lifted by the frame; and hung in its place in the hives.

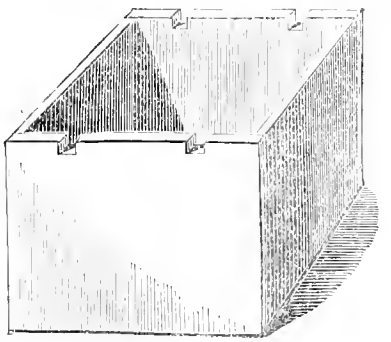
We do not advise an amateur to attempt too much at one operation. It will be quite sufficient for one day if he fixes all the brood combs properly, in their respective positions, so as to keep the brood centralized as much as possible; the odd pieces of comb may be fitted in at a future operation, when the brood combs have been securely fixed by the bees, thus preventing delay, and the chances of the brood being chilled.

Before returning the bees to their combs it will be necessary to fill all vacancies in the hive with empty frames, when it may be set in its place, and the bees shaken on to the top of them, when they will quickly take possession, clear up all bleeding honey, repair and fix the combs, and clear out all debris from the hive. In twenty four hours the hive may be opened and all tapes, pins, corks, and laths removed, and the old pieces of comb spliced into the frames seriatim.

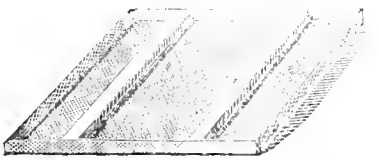
Packing Bees.

As this is a season in which bees are often sent long distances, it may be useful to point out the safest mode of packing them for their journey. It must be borne in mind that it is always unsafe to send hives which contain tender combs any farther than they can be carried by hand, as the least jolting will create great commotion among the bees, and their excitement will so increase the heat in the hive, as to cause the combs to collapse and fall in a heap and to ruin the stock. Straws skeps, however full, may be safely sent a hundred miles, provided the combs be tough, and proper ventilation be given.

Suppose a skep to be sixteen inches in diameter, and one foot high outside measure, it will require a box sixteen inches square and thirteen inches deep inside measure, and a piece of perforated zinc, one inch larger than the top of it all round. Take also two pieces of deal, each an inch square, and eighteen inches long, and notch them into the back and front of the box, like two bars of a rabbit hutch, lay the zinc on them and tack it down to them, so to hold them firmly to it, bend the surplus zinc closely all round the outer edges of the box, and it will be ready for use.



To get the skep into it, blow a little smoke into the entrance, so as to clear the floor board of the bees, raise it and place the zinc on the floor board with the strips of wood uppermost, and set it (the hive) fairly on them, then when the bees are quiet within, invert the box over the whole, bringing the strips of wood into the notches to which they have been fitted, tack the zinc all round the then bottom edges of the box, gently turn the whole, zinc side upwards, and nail strips of wood all round the top edges of the box, as a protection to it. This mode of packing is the *best*, as the hive is firmly held by the sides of the box, and the strips of wood yet permits the bees to wander into its angles, thus preventing over heating and all its attendant evils, and when it arrives at its destination it is only necessary to set it on its stand until the bees are quiet, when it may be unpacked almost without disturbing one of them.



When it is purposed to send bees only short distances, they should be smoked to drive them off the floor board, the hive, turned bottom upwards, two small half hoops or bent wires fixed crosswise into its bottom edges, and a piece of cheesecloth or canvass strainer laid on and tied round with string about three inches from the rim of the hive. The object of the hoops or wires is to keep the cheesecloth well up off the combs, and thus give space to the bees.

They must not, however, be trusted too long under the cheese-cloth, as they are quite capable of making holes through it, and setting themselves at liberty. Hives should always be carried bottom upwards, as then the combs cannot fall out of them.

Correspondence.

To the Editor of the BRITISH BEE JOURNAL.

SIR,—With the honey harvest just approaching, and in anticipation of the establishment of a Bee Guild, will you allow me to ask my brother bee keepers to be good enough to shew through the Journal, the best market for honey in glasses, boxes, or drawn, and the railway fare per hundred miles.

Wishing every success to our Journal, I remain,

A LINCOLNSHIRE BEE KEEPER.

ANXIOUS FOR KNOWLEDGE.

DEAR SIR,—I beg to heartily thank you for the copy of the *British Bee Journal* you so kindly sent me, and I most earnestly hope that it may be a success. Being only a hard working agriculturist, farming about 30 acres of pasture, and finding it a constant struggle to make both ends meet, it is out of my power to subscribe 10s. 6d. per year, but what I wish is that you would issue the paper at about 3d. per copy to those who really cannot afford more, of course only those subscribing the full amount could expect the benefit of immediate reply. I shall lend the copy you sent to all my friends who keep bees. I enclose stamps for it.

SAMUEL HEATH.

Frome, Somersetshire.

EXPERIENCE.

SIR,—I am very much pleased with the Bee Journal, and only wish I could have met with such a paper some fifteen years ago. It would have saved me many pounds in money, to say nothing about trouble.

I have lived amongst (and still live with people) who will stick to the old straw hive. One man (a neighbour, of Trent) lost ten hives last spring. I must admit it was a very bad time for bees. I fed mine and saved them, but many hundreds of stocks were then lost.

I passed through villages last fall in which I have on previous occasions seen from 100 to 150 stocks, but not one single hive could be seen.

Ask who I will, I get the same answer, all died in the Spring. Now I believe what sold most of them was *pollen*. As soon as people see their bees returning with pollen, they think they are laden with honey and so let them starve.

I was about the first to work my bees in boxes *(in these parts)*, and the worst enemy I found was damp, by which I lost nearly all my bees. I have found that out, to my loss, but ventilation is the preventitive. You should know I had no books or other information to work from. I shall look forward with interest for the first of each month.

A MECHANICAL BEE KEEPER.

Penmill, Somerset.

BEE DOCTORS.

SIR,—There is one thing which I much wish you would take into consideration, for if there are many like us (and from what I hear from those who have given up bees "because they did not answer" or "they did not thrive, we don't know why," I think there must be not a few) it would be a great boon, that is the establishment of a society of travelling experts as Bee Doctors. Consulting by letter about ones bees is even less satisfactory than consulting by letter about ones self. It is so difficult to know what is amiss or how to explain, but if by subscribing a regular sum per year, or by paying a moderate fee for each visit, one could command the services of a person whose profession, for part of his time at least, was to go to bee keepers in distress, to transfer their bees, introduce queens for ligurianising, and to give general

advice after seeing the bees, and besides shewing what to do, to do it, I think it would be a very great boon indeed. It would enable many to have bees who are discouraged now, and who find as I do, that books which only speak of fabulous returns, and make no mention of accidents and difficulties, are only misleading, and fill one with disappointment. Is such an idea as this wholly out of the question, or are there enough unsuccessful bee keepers in England willing to pay for such help?

M. C. L.

Manchester.

Having in view the formation of a Bee Guild, could not a Committee of experts grant certipcates of ability to those willing to undertake this branch of the business.

HIVES AND MANAGEMEMT.

SIR,—Which is the best hive, and what is the best material to make it of? These two questions I ask, not for the purpose of receiving information myself, but to obtain for the uninitiated information on a subject which forms the true basis of bee culture, knowing that your journal is intended as a medium for that purpose. I could, were I willing, lay down a rule that would be perfectly satisfactory if bee keepers would follow it out and abide by it, but of late the true art of bee keeping has been so frustrated by the writings of certain enthusiasts, who pretend to know more than any other person of the habits of bees, and yet, singular to say, they will not admit contrivances, the value of which has been proved by experiment. Some of the most prominent of these works are the writings of Mr. A. Pettigrew. Were his instructions and mode of reproduction of bees carried out, the bee keeper would find himself sadly disappointed, and in a few years the useful insect would become comparatively extinct, yet, singular to say, we (hear although only through his trumpet) of great feats done by him and through him, yet it is a fact that his plan of keeping bees (which is no management) is one of the most primitive. I for my own part, though acquainted with several hundred bee keepers, do not know one who would carry out his instructions. Therefore he must have made an erroneous statement when he says in a contemporary that through his influence " the bee keepers of Scotland are making rapid progress in bee keeping " whereas the fact is, for more than thirty years they have been *advancing* with different kinds and forms of hives, and have long since left behind the large one-roomed house, as Mr. Pettigrew terms it, finding the Stewarton and frame hives far superior and better calculated for the production of fine comb, and that in greater abundance than with the old fashioned straw hive, the producer of the abominable drift honey, which is a dirty mixture of pollen, fresh and rotten brood, and old comb, and all the concomitants of its contents, not speaking of the cottager's and children's hands (they may be clean or dirty), which in many cases are used when the combs undergo the squeezing process.

As my object at present is not to give full explanation, but to draw from other bee keepers their experience, I will merely give a few hints the results of my personal observation having had much experience with the different kinds of hives, and having adopted that which produces honey fit for a Sovereign's table.

I will now state that I have, after many experiments, found wood to be the most useful in the manufacture of hives, being cheap and adaptable, more lasting, and as comfortable for the dwelling of bees as any other material.

The next question and one which is of greater importance is the size of the hive, Mr. Pettigrew advocates a large straw hive, and ignores every other hive, style, or material, without appearing to have so much as given them a trial. My experience is that neither Mr. Pettigrew nor any other bee keeper can give a definite size that hives should be, not knowing what the district and weather may be, therefore I consider his advice on that point simply absurd. Whatever kind of hive is used it ought to be capable of contraction or enlargment at pleasure. Thus a hive may be as small during the 1st three months of the year as 1,200 cubic inches, gradually extending it during the 4th month to 2,000 cubic inches and in the 5th month it may be extended to 3,000 cubic inches which would give ample space for breeding purposes, and for the pollen, water and weak honey required, even for the powers of a fully fertile queen.

The next object is to provide space for honey, which is at all times acceptable; the first gathering occurs here generally during the 6th and 7th months, but when the heather is taken advantage of, is usually prolonged until the 8th month, but in other localities it may be earlier. The size of the super ought to be about the fourth of the space occupied by the bees, and if the weather is fine, the bees in such a stock as I speak of, will fill it in from five to eight days, when by that time another super ought to be placed on the top of the one now nearly full, as it is a great loss to allow the bees to relax their work for the purpose of finishing a single super. My experience in hives one size throughout the year, is that a hive to be large enough during the months of June and July, gives too much space during winter and spring, and so retards breeding and encourages mould in the combs, thereby causing much waste in honey when the bees have to repair them, and the season becomes too much advanced before the climax of laying is reached, and the great desideratum, *pure honey*, is never obtained.

From these few remarks, I hope experienced bee keepers will give their experience, and so refute the gross bee literature that has been forced upon the ignorant.

A LANARKSHIRE BEE KEEPER.

REMINISCENSES.

SIR,—I do not think it will be difficult to try and compare the so-called systems of bee management, if we go back by short skips of ten and twenty years, to take up the thread of the naturalists' discoveries in the physiology of the honey bee, and challenge their facts by reference to written evidences, to which doubtless your numerous scientific, as well as practical bee keeping readers, will be able to call attention.

To attempt any catalogue of bee books would exhaust my patience, as well as that of the readers of your Journal, but I commend them to Mr. John Mitton's excellent little work on bees, an " Extract Book of Bee History, with an ample list of writers on the bee :" or to the Rev. W. C. Cotton's illustrated, " My Bee Book," in which he gives not only names of

authors, but a famous collection of mottoes from all nations and languages, and has recently published an amusing verse translation of a German illustrated funny story book, about adventures with bees, bears, &c. If, however, your readers are deep in bee lore, they should revel amongst the yet untold bee writers, whose volumes rest on the shelves in the library of the British Museum.

Going back, however, only about twenty years, would bring us to the period (1851) when the first practical use was made of Exhibitions, and the *First Great National* one in England was inaugurated, by the late lamented Prince Consort, (in 1851) in which bee hives with bees were exhibited, and thus came into more general notice, and Mr. Marriott, with his show of Ligurian Bees in unicomb hives still keeps alive the interest, in the Crystal Palace at Sydenham.

But let us step back another twenty years, and awaken the recollections of that period; when the aged, happy, yet blind Huber of Geneva, passed away in 1831 from the scientific bee world, having, as his biographer, Dr. Candolle, says, "Lived with his father, John Huber, among the witty and the vain, who formed Voltaire's applauding clique at Ferney, and probably enjoyed the honour (at whatever that may be rated), of being patted on the head by the *patriarch* of Ferney, for he was a precocious and enthusiastic child, and the pride of his father, who imparted to Francis that love of science, which, while it produced the misfortune of his blindness, proved also the comfort of his life." Without going further into the memoir of Francis Huber or his *Nouvelles observations sur les Abeilles*, (translated by Sir J. Dalyell, of Edinburgh) in which all the letters of discovery are set forth from Mons. Schirach on the queen bee question, also Mons. de Reaumurs correspondence on the subject, with the observations of the faithful servant, Francis Burnens, the assistant of the blind Huber, I will fly back for a longer period of some fifty or sixty years, and see if the celebrated Daniel or Thomas Wildman left any traces of his bee hives or any memorandum of his mode of handling the swarms of bees at "The Three Hats," Islington. As a period of one hundred years is beyond the memory of your correspondent, I shall leave the question open for some writer to give information of the *oral* traditions of the period, whilst I hope to shew from Thomas Wildman's quarto edition of his own book on "Hives and Bees, &c." what form, size, and practice was followed or believed in at that period of bee history, and what *system* he used for his extraordinary powers of exhibiting bees as harmlessly hanging from his beard. Dr. John Evans, in his poem on "The Bees," in the II. Book, 510 lines gives the following description of truly a "Bee Master:"

> Such was the spell, which round a Wildman's arm,
> Twin'd in dark wreaths the fascinated swarm,
> Bright o'er his breast the glittering legions led,
> Or with a living garland bound his head.
> His dextrous hand, with firm yet hurtless hold,
> Could seize the chief, known by her scales of gold,
> Amidst the wondering train, prune her thin wing,
> Or o'er her folds the silken fetter fling.

I see in the margin Dr. Bevan alters the last line but one of his friends poem, and has so written it in his second edition of "The Honey Bee," which has been followed by others quoting the poem,

> "Prune, mid the wondering train, her filmy wing."

I leave, however, the matter now, to be more closely followed with dates and facts upon another occasion.

Yours, &c.,

W. AUGUSTUS MUNN.

OUR OWN JOURNAL.

DEAR SIR,—The promises held forth in your circular have been most ably carried out, and you have given us really a most valuable collection of information in your first number. The queries and their replies contain much that is necessary just now for the guidance of those not thoroughly posted up in practical knowledge of bee management, and I feel confident that very few of your subscribers will regret having enlisted under your banner. The *British Bee Journal* will supply a want long felt, as although many of us could and did subscribe for journals published in America, the information obtained from that source was most of it too far ahead of our comprehension to be of much practical utility. I have many correspondents amongst English bee keepers, and in the opinion expressed above, I have only confirmed much that has reached me from those with whom I have the pleasure of holding epistolary communion. I have endeavoured to impress upon each one of them the assistance that can be given to the advancement of apiculture by widening and increasing the circulation of "Our own Journal;" for the old Fogyish ideas entertained by the bulk of those who are keepers of bees in this country will never be dispelled until the holders of them can be persuaded to read for themselves of the doings of others. Once get them sufficiently interested in their pursuit to induce them to put aside the old straw skep, and try just one moveable frame hive, and they will so much more appreciate the operations of the industrious little insect, which labours so unremittingly for their benefit, that the destruction of whole colonies will become a thing of the past. It is really surprising that thousands who have kept bees all their lives, should, whilst professing to "know something about bees," entertain the ideas that they do. The Queen is looked upon as the King or as some call her "The Governor," the drones as the females that lay the eggs, and the why or the wherefore of swarming is quite past their comprehension. Many of your readers may laugh at such notions, but let me assure them that in the district in which I live there are very many bee keepers, some possessing as many as twenty, thirty, and forty hives, who are in just this state of ignorance I may mention one man in particular, who in the autumn of 1871, was the possessor of thirty five stocks. From the nature of the season I was well aware that many of them must be nearly destitute of provisions for the winter, and I endeavoured to persuade him to feed them up for the time of need. His reply was characteristic of *his* system:—"Not I, I never have fed my bees, and don't see the good of it. If they can't get enough to live on, let them die." And die they did, for the spring found him with only eleven left out of the thirty five. These are the kind of men to whom the *British Bee Journal* will prove a blessing, if they can only be induced to read it, and I hold that it is *the positive duty* of each one of us, who has the enlightenment of

his fellow man at heart, to take at least one copy of the Journal, and by lending it to such benighted bee slayers, create in them a desire for the light and knowledge that they now possess not. Now, Mr. Editor, you can assist in disseminating knowledge to "the heathen," (for many English bee keepers are little better) and at the same time bring grist to your own mill by following the example set you by many of the editors of the bee publications of America. I mean by offering extra inducements to subscribers. I see that you offer "Special terms to Clubs and Institutes," but this is hardly definite enough. Why not institute a series of prizes for those who can send you the best list of subscribers? To begin with—to those who send you three subscribers, offer one copy of the Journal for twelve months. Give a pure Italian Queen to any one sending you four subscribers. A bar frame hive for a list of six. A swarm of Italian bees for a list of ten, and so on. This would give an opportunity that many would avail themselves of, and would lead to what is so very desirable, the extension of your field of usefulness. I want to see the *British Bee Journal* in the hands of every British bee keeper, and we may then fairly hope that "Sulphurcide" will be abolished, and bee keeping purified from the ignorant prejudices and superstitions that now envelope it. In our glorious little country we possess very many advantages that are denied to others that are far far ahead of us in apiculture, and we only want enlightenment to enable us to hold our own, if not outstrip our neighbours. I do not mean to say that *all* English bee keepers are in this lamentable state of ignorance, for we have hundreds of the best of Apiarians in our midst, who can and no doubt will impart to their less informed brethren, through your columns, the knowledge that they have gained by study, experiment and experience. What we have so long wanted and now thanks to you have, is the *medium* through which the superior knowledge of the one class could be conveyed to the other. To many of your subscribers the offer of a prize will not be necessary, because they will without any inducement, but their desire for the advancement of apiculture, use every effort to extend your sphere. But there are many others to whom the idea of gaining a prize will act as a strong incentive, and it is for this reason that I suggest the prize scheme.

I was much pleased with the letter of "A Renfrewshire Bee Keeper," and his description of the results he obtained from the use of the Stewarton hive, but before I forsake the moveable comb hive, I will try the experiment of managing it on the Stewarton system, viz., by peopling it with double swarms, and I doubt not but that I can obtain as many supers of pure honey untainted by brood or pollen as with the Stewarton hive. Anyway I shall try the experiment, as to my mind the whole secret rests in the immense strength that is given from the outset by two swarms instead of one.

I cannot conclude without giving my firm adherence to the proposed Bee Guild. The want of a certain market for their produce has decided many to give up bee keeping, and the certainty of such an outlet would induce many more to embark in the pleasant occupation. The prize scheme will produce a spirit of rivalry that must be beneficial, and will bring to light improvements in hives and bee furniture that may even now be in existence, but which are used only by their inventors, because no inducement exists for their being made public. Whoever H.W.T. may be, he has hit the right nail on the head this time, and has most ably set forth the scheme he has originated. I hope to see all that he proposes eventually carried out, and under any circumstances he will have the best wishes and hearty support of

NOVICE.

THE STEWARTON HIVE AND SYSTEM.

The Stewarton Hive, as the present writer first found it, consisted of three octagon breeding, or, as locally termed, *body* boxes, 14 inches wide, by 6 deep, each furnished with seven bars, 1 ½ inches broad, the ⅜ spaces between, filled with moveable slides of wood, working in grooves in the bars, with a shuttered window back and front, handles to lift with, hooks to weigh with, and little buttons to prevent displacement. In the centre, across from side to side, was fixed a half inch square bit of wood to support the combs, the one or two supers, or honey boxes, were exactly alike, but only four inches deep, and without the cross stick, all neatly dove-tailed at the corners—the whole forming one hive, which is usually described as a "Stewarton Set."

My earliest acquaintanceship with bee keeping began, as will afterwards be alluded to, with moveable bars and the nicest calculations as to their distances apart, from centre to centre, were made, where our little favourites had ample space to work at their own sweet will; and every true student of nature must follow humbly in her wake. I had also a very great repugnance to the mode in which my new hives were divided. The broad, 1 ½ inch wide bars of the supers were all right enough, and a capital idea, too, which I had never met with in the "authorities," as the thicker and more massive the honey comb, the more striking its appearance; besides, the additional depth of the cells renders them unfitted for brood, should the Queen unfortunately find her way up at any time into them, and their extra shallowness, as honey boxes, is a similar preventative against their being so employed. While conducing most materially to the better classification of the honey harvested, the only fault I had to find with them was the fixity of the bars; the sprigs with which they were nailed I had at once withdrawn, and half-inch brass screws were substituted. But 1 ½ inch wide bars for brood-comb in the breeding boxes was a manifest absurdity, and I had them removed, (saving the outermost at either side), as these in whatever description of hive employed, are invariably used for storing honey, but condemned the other five, and in their place fixed six bars 1 ⅛ inches broad, with screws. I increased the depth of boxes from six to seven inches, (the latter being the depth of the square hives I had previously used) and I need not hint, but to the beginner, the desirability of keeping up, as much as possible, strict uniformity of dimensions in whatever description of hive employed, for the interchange of combs and other reasons. My present strong octagon stocks during the season are wrought with two 7-inch breeding boxes, and a 4-inch eke. Finding an entrance of five inches long by half an inch deep inadequate to

vent the bees of such populous colonies at the height of the season, I opened a corresponding one in each of the octagonal divisions, on either side of the front one, with the very best results, from the increased freer egress and ingress thereby afforded to the teeming populations, besides the exhiliarating effects of so much fresh air, caused a considerable saving of labour power in fanning, to be more beneficially employed in the storing of honey.

The general mode of manipulating the Stewarton Hive is to lash a couple of the breeding boxes together at the weighing hooks with cord, after the bars of the boxes had been duly furnished with comb, or embossed wax sheet, run in the sliding door of the upper, withdraw all the slides of the lower, and close the openings with the little pegs accompanying the boxes. With the free communication between, the two become to all intents and purposes, one, and the bees may then be introduced—a prime swarm, of course. Some eight or ten days thereafter a second prime swarm, if procurable, is hived in the third breeding box, and at once set down close to the earlier one, and at dusk the last named is placed on the top of it. The lower of the two first boxes—now the central—has its door run in, and the slides of the lowest are removed and pegged as before. Should the evening prove chilly, a whiff of smoke may be administered to both, but this is generally considered quite unnecessary, as it is a well established fact that no bee leaves with a swarm till it has filled its honey bag, and the lower ascends with a most confiding hum, evidently firm believers in the old Scotch proverb—"Plenty freens when ye hae ocht."

Mr. Alfred Neighbour's useful treatise, the "Apiary"—if I remember on this point teaches that the swarm to be added is first to be knocked out upon a table-cloth; the operator is to move the earlier swarm, in the two boxes, and set them on a couple of bricks till the bees have joined, and then it is to be carried back to its stand. Now, knocking out bees on a table-cloth at dusk, with probably a falling dew, is a questionable proceeding at the best, and to so unite with a hive possessing the ingenious contrivance of the bar and slide of the Stewarton, most uncalled for. Suppose the operator be a novice, and after sundry thumpings on the straw skep, to get the bees thoroughly out upon the tablecloth, he hurries off for the other hive, and in his trepidation as he bears it along, which is not to be wondered at, one of the watchful guards administers a sharp sting, causing him to wince, and if the boxes are put the smallest degree off the balance, down comes the tender, soft combs, *en masse*, ere he may reach the cloth; or does he stand firm till then? and sets them down with anything like a sharp thud, a similar result follows; or if any of the straying bees are trod upon accidentally, and the war note once sounded, what a *melee* follows. Portions of the bees are apt to stray under the cloth and get chilled and lost, or a detachment might find its way up the operator's inexpressibles, and then what a kicking and rubbing will ensue. The great simplicity and facilities of uniting with the bars and slides induced me to order a quantity of these in lengths, along with the boxes, which I cut up and fitted to my other hives, and the reader would find the advantage of doing likewise.

But to return. The morning light reveals usually nothing but the surplus Queen dead on the the floor board. The lowest box is then removed, and the entrance of the second again opened. Should any bees be clustering in the lowest, the removal can be postponed till the middle of the day, when the workers will be more abroad. The object of removing the third box is to restrict the room so that the combined swarms may all the sooner complete comb building, and packing to the glass, and be thankful to press up into the super which has been placed thereon, fitted with guide comb. Communication between stock and super is afforded by drawing the outer slide on either side only. Should the weather be favourable and honey abound it is at once taken to; if not, it is better to run in the slides again and wait for a day or two, then under more favourable circumstances, make a fresh trial, as it is a curious fact that bees often will swarm rather than accept a super open to them, and which they have previously rejected. Supposing, which is generally the case, the bees have taken possession, in a very few days white comb appears at the windows; then, and not till then, the third breeding box is placed as a nadir underneath all, its slides withdrawn, and pegged as at the union, and the door way of the central box closed once more. The colony may now be said to be fairly under weigh, and should favourable honey gathering weather continue, a second honey box may be placed on the first, and all the slides of the first super withdrawn. To induce the bees all the more readily to take to the supers, I have found it of considerable advantage to run a strip of gummed paper round the juncture of the stock with the super as well as with it and succeeding ones, should it be taken to, or if honey be plentiful, a second slide on either side of the top box may be withdrawn, at first either partially or wholly. This is a nice operation, dependent on the flow of honey, and the bee master must exercise his own discretion, so as, if possibe, to prevent the incursions of Her Majesty into the super. The plan of admitting only the honey gatherers of the end combs to the supers, to the exclusion of the Queen, the nurses, and the pollen collectors of the centre, is a most ingenious, original, and indeed one of the most valuable features of the Stewarton System. A third and other supers may still be called for, and the additional super accommodation afforded, always uppermost, and in exceptional cases even additional breeding space by nadiring at bottom may be requisite, although the strong colony referred to in your last issue, was wrought with but eighteen inches breeding space, while filling *seven* honey boxes or supers in various stages of progress. To get bees to take to supers at first, and to work in them steadily through the vicissitudes of temperature, it is indispensable that they be well wrapped up with some warm woollen stuff. I generally employ old crumb cloths for this purpose, four plies thick, and need I add that the Stewarton hive being formed of wood but $\frac{5}{8}$ of an inch thick, it is of course requisite, and must have the protection of a bee house or shed from the direct rays of the sun, or better still, an outer octagon case, with a nicely bevelled roof, and an ornamental vase on top, forms a most ornamental adjunct of the apiary or garden.

So soon as the lowest super is seen sealed at the windows the attachments between it, and the stock

and 2nd super, severed with a thread, had better be removed, the next-lowest taking its place and so on, till the end of the season. When all are removed, and slides re-introduced, then as cold weather sets in, and the lowest breeding box vacated, it too, is better taken away, the slides replaced, the mouth wrapped carefully up with paper to exclude moth and dust, and suspended in any cool, dry garret, till required the next season. To obviate the accumulation of moisture, in a glass observatory stock, working in a staircase window, I tried with great success, fine India or Cuba matting to cover the slide spaces, and by the thorough ventilation thereby afforded, that colony successfully withstood 25° internal heat, as shewn by the inside thermometer, on the memorable Christmas Eve of the very severe winter of 1860 and 1861, and ever since I complete my wintering preparations by withdrawing all the slides from the topmost box, and tacking on an octagon of matting, bound round its edges to prevent rippling, and by these contrivances my little favourites come through the winter as dry and snug as in the most porous of straw skeps. The slides, of course, take the place of the matting again when breeding recommences with the advancing spring.

At first I procured my boxes from a party who advertised and sold them, but from alterations I wished made in their construction, I was obliged to correspond direct with Mr. James Allan, Cabinet Maker, Stewarton, their maker, and I understand the Messrs. Craig, and Dr. Wylie turn out a good job, but personally know little or nothing of the manufacturers, my sole interest being to see I get good workmanship. One thing, however, I may mention, that our local tradesmen cannot make them to compete at Stewarton prices, and several I know, who are bee keepers themselves, actually order their boxes direct from Stewarton, instead of making the attempt at turning them out at the extreme low prices at which they are procurable there.

Having already trespassed too much on your valuable space, I must postpone my retrospective glance of storifying generally, and the origin and superiority of the Stewarton in particular over other and older systems till next month.

A RENFREWSHIRE BEE KEEPER.

Queries and Replies.

NOTICE.—*When queries on any subject are nearly synonymous, we only publish that which has required the fullest reply.*

QUERIES NOS. 12, 13, AND 14.—12. Having taken a swarm and wishing to prevent the issue of a cast, should a super be put on *directly* the swarm has left the hive? 13. How soon should a super be put on a new swarm? 14. When should supers be put on hives which we do not want to swarm at all? Supposing a genial season, would the end of April be too early?

Leatherhead. GREAT BOOKHAM.

REPLY TO QUERIES 12, 13, 14.—12. The most probable way of preventing after swarms is by cutting out all the queen cells in the hive except one, but as that cannot be done with any degree of certainty where the bees are in straw skeps, it is not applicable in your case. If a super be placed on a hive immediately after a first swarm has left it, it allows an increased radiation of heat at a time when its economy is of the most vital importance to the colony, for the exodus of the swarm leaves the hive very thinly populated with bees, while the combs are nearly filled with brood and queen cells in all stages, to which a chill might be fatal. It would be far better to allow the cast to come forth, to hive it until the evening, and then return it to its original domicile.

13. Supers may be put on to new swarms as soon as the bees have filled their hives with comb.

14. The right time to super stocks which are not required to swarm is when the combs are filled with brood down to their bottoms. The end of April is not too early in a genial season; but it would be wiser to give the bees increased breeding space by first adding a nadir to their hive, unless it be a large one, as otherwise the super may be spoiled by the Queen depositing eggs therein. ED.

QUERY NO. 15.—Could you tell me the way to hive a swarm into a bar and frame hive, and do you think I could swarm my bees artificially, and which do you consider the best way to do it? Is the swarming or super plan the most profitable, and which do you consider the best hives to use?

W.N.G., a Beekeeper of Alphington.

REPLY TO NO. 15.—Lay a sheet or large newspaper on the ground near where the swarm has alighted, place the hive on it with its front propped up an inch or so with a stone or piece of wood. Take a straw skep, a pail, or other vessel, shake the bees into it (as in ordinary hiving), and throw them down on the sheet in front of the bar frame hive, when, if the Queen is with them, they will all go quietly into it. You then treat them as you would bees in an ordinary straw skep, and either set them on the stand in place of the hive from which they emerged, or give them a separate location as may be most desirable.

Artificial swarming is fully described in the *British Bee Journal*, No. 1.

The swarming and supering systems are both profitable if you can satisfactorily dispose of your surplus bees and honey.

If you can sell your swarms and put ready cash in your pocket now, swarm your bees by all means, as that will be more certain than trusting to the chances of the honey season, but if you have no sale for them, and have no reason to multiply your stocks, the increase will be of little service to you. Honey is the only real profit of bee keeping. Multiplying swarms for sale is the business of a bee dealer, but it must rest entirely with yourself, which result you will most endeavour to attain. The best hive is that which gives most facilities in the management of the bees, and in this respect the moveable comb hives have an advantage. Langstroth names 61 requisites for a complete hive, but we are satisfied if the combs are moveable, and the hives themselves capable of enlargement or contraction with little trouble. Storifying, nadiring, and supering are all good if the hives be large enough, but since the invention of the honey slinger they are considered unnecessary where it is used, and as it comes into use here other systems of management will decline. We recommend you to adopt a bar frame hive the breeding apartment of which is capable of expansion or contraction as may be necessary to suit the wants of either a large or small swarm.

A Woodbury hive with about sixteen frames and moveable division boards would be very good and capable of regulation to almost any extent, but we think a hive should have its greatest length from front to rear, as it is easier for bees to travel between the combs than across them.

We expect however that the subject will be pretty freely discussed in this Journal, as every maker thinks he has the best hive, and does not hesitate to say so. ED.

QUERY NO 16. I was very pleased to receive the first number of the *British Bee Journal* on the 2nd inst. and hope that you have a goodly number of subscribers, so that we may get well ventilated the merits of the different systems, which are so strongly advocated by the makers and patrons of the many styles of hives now in use. I opened some of my frame hives last night, and used tobacco, and dosed them well too; but from some cause or other, I could not subdue the bees so well as I should have wished. I was very quiet too; but they would rush out at me, and sting my gloves. Of course I was protected on the face with a veil. I shall be glad to get your opinion about it, as it appears to me rather a formidable job to exchange combs with very strong stocks.

JOHN WALTON.

Weston, Leamington, May 13th, 1873.

REPLY TO NO. 16. Your failure in your endeavour to subdue the bees arose from their not being allowed sufficient time to gorge themselves with honey. Your stock being a strong one, most of the cells were undoubtedly occupied by eggs and brood, and the honey cells to which the bees have access, being probably insufficient to accommodate the hundredth part of them, many thousands would simply be rendered more irritable than otherwise, for they quickly recover from the effects of the smoke alone, when pure air is admitted to them. The object in smok-

ing them is to cause them to fill themselves with honey (or syrup if you give it to them) which they will invariably do, if they can get it, but as a cell will only accommodate one bee at a time, it is evident where the number of cells is so limited, and the number of bees so great that it must take some time for them all to get supplied.

Next time you attempt the task blow some smoke into the top of the hive, and sprinkle the combs well with scented syrup, and replace the cover for a few minutes, taking care that the scent of their sting poison is eradicated from your gloves and veil as even its slightest odour is most irritating to them, and may render them as irascible as ever.

Langstroth's controlling principles are these :—

A honey bee, when filled with honey, never volunteers an attack, but acts solely on the defensive.

Bees cannot under any circumstances, resist the temptation to fill themselves with liquid sweets.

Bees, when frightened, immediately begin to fill themselves with honey from the combs.

By bearing these facts in mind and giving them due effect, the most irascible bees may be easily subdued.

QUERY No. 17.—1. I saw in the winter a good deal of moisture on the windows of my wooden bee boxes. In one stock, well supplied with honey, fully one half of the bees died, apparently from mildew. Are straw boxes better in this respect, and do you recommend them in preference to all others on all accounts? 2. In removing Queen bees on combs from bar and frame hives, does the Queen ever take flight?

Hereford. WEIR.

The bees evidently died of dysentery, caused by too much moisture in the hive. It could have been prevented by proper attention to ventilation which would have allowed the moist vapours to pass off instead of condensing in the hive.

It matters little which material is used for hives, whether wood or straw, as unless properly ventilated, the vapours will condense in them, and dysentery will result.

A Queen will sometimes take wing from a comb, as it is being examined, and take an airing for a minute or so, but will generally return to the hive. When such a case occurs, it is wise to leave the hive as she left it, until she returns, as otherwise she may not recognise it, and may attempt to enter another hive and be killed.

QUERY 18.—Will you reply to the following query? A new hive last year now filled with combs, but bees all dead in it. Is it necessary to remove any of the comb before hiving in a fresh swarm?

REPLY TO No. 18.—If the combs are quite free of bees and wax moth, and the bees died simply of starvation, excision of combs is unnecessary. If the bees died of foul brood, you had better melt down the combs, and burn the hive as quickly as possible. If they died of dysentery, there is probably a considerable deal of filth in the hive which you cannot remove without first removing the combs.

When a stock of bees dies in winter, the centre of the comb is generally found filled with dead and decayed bees, hundreds of which are densely packed in the cells, and these it will be impossible to remove unless the combs are taken out

We advise you to cut out every alternate comb in the hive, by doing which you will ascertain their true condition, those remaining in the hive will be quite sufficient for the coming swarm, and the excised comb may be otherwise utilized.

It is not always good policy to place a swarm in a hive *filled* with combs, particularly when they are fixed as in straw skeps, as the bees having no comb to build, and no brood to feed for several days, may, in a good season so store the hive with honey and pollen, as to leave little room for the queen to breed in.

QUERY No. 19.—Three weeks ago I decapitated four old straw hives, fastening on the top boards with putty, the bees have been feeding well, and appear strong; but I am now told that eventually the putty will kill them. If such is the case, I know not what to do with six hives I now want to get home, as before they swarmed I had intended to treat them in the same manner. Would it be more prudent to let them swarm, and then put on boards? but how?

Westmeath. DELVIN.

REPLY TO No. 19.—Your bees after three weeks experience with the putty do not seem to have suffered any harm, and, as after the lapse of that time, it must have become quite hard, we do not see how it can possibly hurt them.

We never knew bees eat putty or store it in their cells; we grant it is an offensive material when new, so also is cowdung which is much recommend for similar purposes, but in all cases of the kind we recommend plaster of Paris as a wholesome, cleanly material, and one which will set hard as it is worked. This will solve your last difficulty—how to do it? The question of swarming must be governed by your own wishes, the application of the adapting boards need not effect that question.

NOTICES TO CORRESPONDENTS AND ENQUIRERS.

C. W. S. SHANKLIN, will find his query on the irascibility of bees, replied to in answer to query No. 16.

F. W. S. CHESTER, wishes someone to recommend a honey extractor, purchasable in England.

R. D. F. AYR—Sheet zinc is too good a conductor of heat to be good as an inner lining to the floor board of a hive, as it is likely to conduce to the undue condensation of the vapours in the hive, and thus cause dampness instead of preventing it. If only intended to prevent damp from rising, it would be better to place it *under* the wooden floor board.

CAROL M.—We are greatly flattered by your poetical favor, but being pressed with business matters cannot find space for sentiment.

We have tried Aston's bee trap, in fact, we use no other. A dozen supers may be simultaneously cleared by the use of one of them, as it is only necessary to fix it to an opening in the side of a large box, set the supers inside, slightly raised, and shut down the lid. It is a mistake to suppose the trap will get bees out of a super; its great value is in its permitting them to get out without difficulty, and preventing their return. It can scarcely be expected to remove the queen, the brood, and the nursing bees which may be in a super, but that is not the fault of the trap, but of the bee keeper for permitting such a state of things, When first brought under our notice we recommended its inventor to claim for it a special value as a drone trap, but as he is silent on that subject we will just point out that if a hive be slightly raised in front, so as to permit workers only to come out, and the trap fixed against the regular entrance of the hive, all the drones that come out must pass through its portals, and under any circumstances cannot return, but we suggest that as soon as they pass out through the trap they should find themselves in a box placed to receive them, and from which only workers can escape, leaving the drones prisoners to be dealt with accordingly. Thus may a whole neighbourhood be cleared of undesirable drones; no small boon we think to breeders of Ligurian queens. [ED.]

NOTE—We have received several letters on the subject of the proposed Bee Guild, but they principally have reference to its management after its formation, and as that desirable event is in the future, we defer their publication for the present. In the meantime we shall be happy to give all the aid in our power in furtherance of the proposal. [ED.]

In consequence of great pressure on our space, we are reluctantly compelled to omit a mass of interesting information, which however shall appear in a future number.

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THE

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AND BEE KEEPER'S ADVISER.

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[No. 3. Vol. 1.] JULY, 1873. [Published Monthly.]

DIRECTIONS TO CORRESPONDENTS & QUERISTS.

1.—Write in a legible hand on one side of the paper only.

2.—Use no abbreviations which are not to appear in print.

3.—Keep every query distinct and separate, and give the fullest possible particulars, stating also the kind of hive used.

4.—When requiring an immediate reply, send a stamped ADDRESSED *envelope, or stamps for cost of telegram.*

The British Bee Journal.

JULY, 1873.

The great question at the present time among bee keepers is not "how shall I get the bees out of my supers," but "how shall I get them to work in them." Complaints are general that "bees won't work," "they hang idle outside," "they have not stored an ounce of honey," "they do nothing but swarm," "they will not go into the supers, try what one will." These and many other forms of complaint are made against the "little busy bees," as if they had taken the initiative from the labouring communities of men, and had resolved on "a general strike."

The cause, however, of the apparently general inactivity of the bees is to be found in the miserably wretched weather which has prevailed during the past three months, and which has not only hindered the secretion of honey, but has prevented the bees often for whole days together from leaving their hives in search of the little that might have been found, and the consequence is that instead of storing surplus food, many hundred of stocks are in great danger of starvation from the want of it. This is no whimsical idea, as many will find who withhold the aid necessary to enable their stocks to continue their breeding and keep up the strength of their working populations until the honey season arrives. The season is altogether late and however tiresome it may be to the anxious amateur, we can only recommend him to "watch and wait."

The proposed Bee Guild is a subject of great interest with our numerous correspondents, but no "one" seems inclined to take the initiative, and promote the object in a really tangible way. Advice is freely offered, suggestions made, and information given, and asked for, all of which we are quite ready and willing to publish or give, but we are at present too fully engaged with our Journal and our correspondents, to be able to give the time and careful attention necessary in the *formation* of such a desirable association.

H. W. T., who proposed the scheme, witholds his name, as he "cannot offer practical help in carrying it out," and this we think peculiarly unfortunate, as the mind that conceived the idea must certainly be best qualified to elaborate, and bring it into palpable existence. One of its features, the establishment of a market for bee produce, is of vast importance to bee keepers generally, and if brought about would greatly enhance the pleasure and profit of bee culture, yet would lower the prices of honey and wax to consumers. We most sincerely hope that this subject will not be lost sight of, and that during the months when the bees are quiet, and need less attention than at the present time, the question will be fully considered and acted upon, so that Apiculture may possess a Society or Guild capable of acting in unison with its sister sciences, Agriculture and Horticulture.

We are glad to observe that at the Great International Exhibition of Fruit to be held at the Botanical Gardens, Old Trafford, Manchester, in the early part of September next, prizes to the value of £25, and two Society's Medals, one of silver and the other of bronze, are to be given for the best hives, bees, honey, and implements. The date of the show is not yet named, but we give an early intimation of the fact, in the hope that other societies may be stimulated to the adoption of similar exhibitions.

The idea of travelling "bee doctors" gains ground, and we receive many applications for such experts to "overhaul" and rectify the errors and misfortunes of amateurs. There is, unfortunately, no royal road to the necessary knowledge of bee culture, and that gathered from books, no matter how explicitly conveyed, is never so well appreciated as when similar operations to those described have been witnessed. Driving or drumming, the examination of a set of combs in a bar frame hive, finding the queen among a driven swarm, or searching for her in a bar frame hive, are operations which afford most intense gratification to amateur bee keepers, and give them such an insight into the "mystery of management" that after operations are rendered comparatively easy to them.

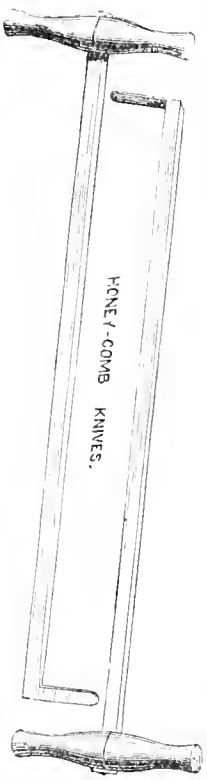
A travelling expert could shew all this, and much more, and every one who thus saw bees so manipulated, would become a living witness of the truth of what is now generally considered a doubtful matter. Ignorant bee keepers *do not* believe that the operations spoken of can be performed, and *will not* believe in their efficacy, hence their indifference to the improved mode of cultivating our favourites.

The capture of undersirable drones, though much neglected, is really most important whether as a means of preventing the cross breeding of bees, or to relieve the hives of what are in such a season as the present useless consumers only. Our remarks in last No., have caused the production of several drone traps and cages, all of which however, came too late for illustration and neither of which shews any great improvement on the simple method then suggested for the attainment of that end.

WHAT TO DO, AND WHEN AND HOW TO DO IT.

In transferring combs from straw skeps or box hives, to bar frames, it sometimes happens, as is often the case, when frames of comb are built up in autumn of the pieces of brood comb and pollen saved from the sulphur pit, that some of the pieces are too small to wedge up or tie in conveniently, as suggested on page 9 of our first number. In such a case we recommend that they be crowded in, so as to fill the frames, which should then be covered on both sides with fine galvanized wire netting, about two inches wide in the mesh. This will ordinarily maintain its figure, into whatever form it is pressed, can be easily fastened on and removed, will take up very little space either upon or between the combs, will not irritate the bees as tape or string does, and the combs are sure to be flat and straight if ordinary care be taken.

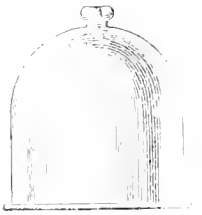
This is far better than the ordinary method of supporting the pieces of comb with laths laid across both sides of them, is much handier, and not so likely to destroy the brood, and if, from any cause it is left longer in the hive than is necessary will cause little inconvenience to the bees.



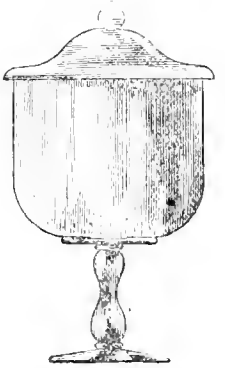
If from any cause it is thought desirable to save the skep from which the combs are to be transferred, it is necessary that knives be provided of patterns similar to those shewn in the engraving, one of which is made for cutting the comb away from the sides of the hive, and the other for separating it from the crown, and to aid in lifting it out of the hive. They are also useful for excising combs when they become overcharged with pollen, or when stocks have died, and it is necessary to ascertain the condition of combs prior to hiving a new swarm in them, and for removing side combs in autumn, when it may be too late to give additional supers, and yet space may be required to enable the bees to continue their labours to the utmost.

SUPERS.

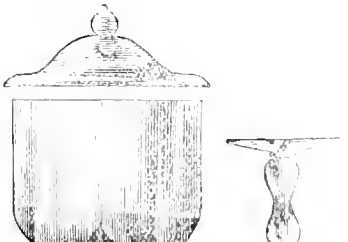
Those who prefer supers of glass may be glad to see specimens of the various kinds in use, and by favour of Mr. Yates, we are enabled to present some of those most used in and about Manchester. The bell glass is made to hold from six pounds to sixteen, and when filled with honey forms a handsome table ornament.



The Pettigrew super has a loose lid and is so constructed that when filled, the lid may be removed by the application of a cloth dipped in hot water and applied to it, by which means the wazen attachments are softened and it becomes free. The comb may then be cut out as required and the cover replaced, the leaking honey finding its way into the dish on which the super stands. They are made to hold from twelve to sixteen pounds in weight. The Abingdon super is far more elegant than either, although partaking very much of the character of the Pettigrew.

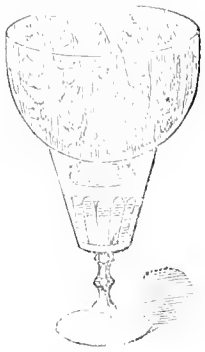


It is in three parts, and when filled, forms as a whole, a very ornamental acquisition to the breakfast or tea table. We only see one improvement required in such an article, we think the stem should be of glass to receive the leaking honey, and that the super should permit of a piece of strainer being applied, so that what runs through should be perfectly pure in the receptacle below.



Hole 3 to 4 inches.

Some years ago we advocated the use of glass pots of the form shewn below, they were pretty much like the open moons used on gas chandeliers, the rim at bottom affording means by which a piece of fine muslin can be applied as a strainer.



When put on the hive a piece of thin board formed the top, which was either waxed or had attraction combs fixed on it. When filled it was intended to be placed on a glass flagon for table use, thus forming an ornamental vase from which could be obtained either honey comb or purest run honey, which latter was always found strained in the flagon. We give the idea for what it is worth, and ask no royalty on its adoption.

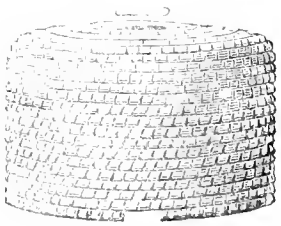
HIVES.

In treating of hives we wish it to be distinctly understood that we recognize two kinds of hives only, viz., those in which the combs are fixed as in the ordinary straw skep, and common box hive, and those in which facilities are afforded by which they are rendered moveable as in the Langstroth, Munn, and Woodbury Hives. We know of nothing that so militates against success in bee keeping as *dependence on hives* for procuring the wished-for result, whether it be the increase of stocks, or the accumulation of honey. Their shape, make or material, has very little to do with the matter, size and adaptability being the only essentials, for bees will work equally well in a common hollow log, a chimney, or in the roof of a house, as in the most elaborate palatial domicile of cedar and gold that could possibly be constructed. Not only are we frequently asked, "Which is the best kind of hive?" "Which is the best hive of its kind?" and "What is the best material with which to construct them?", but we are repeatedly requested to recommend them, often without a hint being given as to the nature of the locality, and its honey prospects, or the skill and knowledge of the enquirer. In our opinion good results may be obtained from hives of every description, provided they be large enough, or capable of being so [illegible] but which it will always be materially influenced by the knowledge and skill of the beekeeper. The straw skep in some form or other

has from time immemorial been used as a bee domicile with varied success, and is so well known as scarcely to need description here.

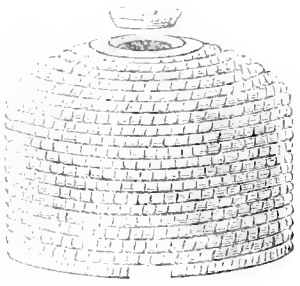
It has assumed nearly every variety of form of which a vessel with a circular base is capable from the half of a lemon with an almost pointed top, to that of a miniature wheat rick, with a semi-spherical top. Now, however, the dispute as to the relative merits of its various forms narrows itself to the consideration of flat tops, versus round tops. For hives with flat tops it is urged that the super can be more easily applied than with the round ones, but in favour of the latter it is shewn that the tops being dome shaped cannot collapse, and allow the combs to sink or be crushed either by their own weight, or that of the supers upon them.

By favour of Mr. Yates, of Old Millgate, Manchester, we are enabled to place before our readers illustrations of the two styles of hives above mentioned.



PETTIGREW'S PATTERN.

The first is called the Pettigrew hive, the second Yates's hive, both are equally well-made of straw, bound with cane, their sides are upright, but they vary in the shape of their crown as before stated. They are each furnished with a central hole in top, four inches in diameter, for tupering or feeding, but while in the former the hole is worked in the straw, and has a straw cover which is secured to the top by three long nails, that in the latter is turned in wood, worked into the straw, which having a well fitting wooden plug made slightly tapering, needs no further fixing, and may be easily removed.

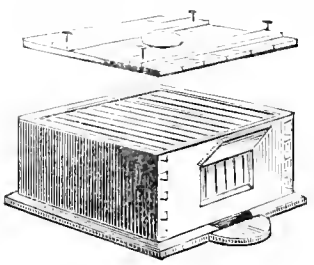


YATES'S PATTERN.

The [illegible] one variation also in their sizes and consequent acceptability, the Pettigrew hive being made in three sizes only, viz., 16, 18, and 20 inches in diameter, and 12 inches high, inside measure, whereas Yates's hive is of four sizes, viz., 14, 16, 18, and 20 inches in diameter, and 10, 12, 13, and 14 inches in height inside respectively.

These two patterns are undoubtedly "the best of their kind," and to those who prefer the straw skep we strongly recommend them. The size adopted must, of course, depend on the strength of the swarm to be hived, and as that will mainly depend on the size of the hive from which it emanates, we can give no special directions for the guidance of the amateur. It is, however, always safer to place a swarm in a hive that is a little too small, than in one which is too large to be filled in one season, as in the former case an eke or a nadir may be applied, to give increased space, whereas, if the hive be too large, there remains during the winter a gaping vacancy, which encourages the mouse, moth, and spider.

In discussing the merits of the bar frame moveable comb principle, we do not pin our faith to any special hive, and although we present an engraving of a Woodbury hive, we do not claim for it any superiority over any other, but inasmuch as it was one of the earliest adopted in this country, we take it as an example, to shew the advantages and merits of the system. In the engraving the crown board is slightly raised, to shew at once the interior order of the bar frames, and the window, (which by-the-bye, is for convenience at the back of the hive, and not in the front as shewn,) gives a view of their position as they hang in the hive.



THE WOODBURY HIVE.

The hive itself is 14½ inches square, and nine inches deep, inside measurement, it is made of pine, one inch thick, and in that illustrated, is dove-tailed, together at its angles, but for all practical purposes it would be just as good nailed, or put together with angle irons or plates. The top or crown board is usually framed and keyed, to prevent warping, but in engraving is shewn in narrow strips, held down by two clamps, with a screw at each of their ends, a method which answers the full purpose of preventing warping, and is much more convenient in practice, by permit-

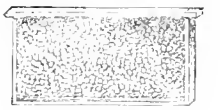
ting a portion of the hive to be examined without uselessly disturbing the whole, and also permits of free ventilation, as the strips may be separated at any or every part of the crown board, and closed again with perfect ease and safety.

For feeding purposes the crown board is furnished with a central hole of from one and a half to two and a half inches in diameter, covered with perforated zinc, which when not in use may be covered with a small block of wood, or piece of matting or carpet.

The floor board is of inch pine, clamped by two pieces of stout quartering, it is about 18 inches square, and consequently projects about three quarters of an inch beyond the hive all round. This projection is useful for an outer cover to rest upon, and is chamfered down to throw off the rain. The entrance is cut in the floor board, forming a channel about four inches wide, and three eights of an inch deep at the part where the front of the hive crosses it, but gradually slopes upward inside the hive. The alighting board is fixed to the lower edge of floor board, level with the bottom of the entrance channel, or may be nailed underneath it so as to project a few inches, the front edge under the channel being pared down to it.

The frames are ten in number, and upon them hinges the distinction between the two classes of hives first mentioned inasmuch as by their means the combs which are built or fastened in them are moveable at the will of the apiarian, and without necessarily injuring any portion of them, or hurting a single bee. They are made of light lath about seven eighths of an inch wide, the top bars being three eighths, and the sides and bottom rails five sixteenths of an inch in thickness respectively. The top bars are fifteen and a quarter inches in length, and project into notches cut into rabbets to receive them. The frames are kept in position at bottom by a light notched rack, the notches in which correspond exactly with those in the rabbets, so that when in their places they are comparatively rigid.

The rabbets are three eighths of an inch deep, and the notches in them are of the same depth, so that the projections in the bars rest flush in them, leaving a space of three eighths of an inch clear above the bars, over which the bees can travel. The width of the notches and the distances between them are governed by the width of the top bars of the frames. The width of the hive is fourteen and a half inches, and the ten frames occupy equal portions of the space, so that to arrive at the exact measurement the fourteen and half inches must be divided into ten equal divisions, the centre of each of which will be exactly the point on which the centre of each bar should rest. These points will be one and nine twentieth inches apart, but as those distances are not easily measured and set out by the ordinary carpenters rule, it would be better to make a template of thin brass, or zinc, in which the notches and spaces are correctly cut, and then to make a special frame of the exact size given to be kept as a pattern, so that in future all the notches and bottom racks and all the frames may be of correct dimensions. The frames are thirteen inches long and seven and a quarter inches high inside measure, and when in use present the appearance shewn in engraving.



FRAME OF COMB.

It seems singular however, with a hive 14 and a half inches square, and nine inches deep that the available space for comb building within the frames should be so confined, and when it is remembered that the bees as a rule, will not build their combs downward any nearer to the bottom rail of the frame than they would to the floor board of the hive if the rail were removed, a further loss of space within the frames is indicated, which averages about five eights of an inch, all along the rail, thus leaving the combs little more than six and a half inches in depth, and indicating a loss of space in the depth of the hive of two and half inches nearly, or more than one fourth.

THE STEWARTON HIVE AND BEE.

Before proceeding further to discuss the above subject, I would seek to correct an error in your last issue, page 14, by which I was made to say that the observatory colony there alluded to, "Successfully withstood 25° degrees internal *heat*," whereas *frost* was the word intended.

We Northerners awoke that particular morning, to find the thermometer placed in the comparative shelter of the parlour window, at the beach, point of one degree below zero, while that within the observatory registered seven degrees above it, or in other words 25 degrees frost. It was a most interesting sight hourly to visit the study during the night, and listen to the roaring hum of my little favourites as they energetically fought to keep up the ever falling temperature, and to compare it with the death like silence which reigned in the morning, the beautiful vacuum from the

easel of Jack Frost alone recording that life and death struggle. Although this was the greatest cold I am aware of bees having successfully withstood in this country, still they must cope with much severer frosts during Russian and Canadian winters, but the extreme dryness of these climates is greatly in their favour. It is not severe cold which proves so destructive in the wintering of bees with us, as the vicissitudes and humidity of the atmosphere of our Island home, causing the adoption of the ventilating plan for their healthful preservation, particularly in hives of wood or glass, imperative.

As a further improvement on the Stewarton hive I omitted to mention in my last contribution, that moveable bars speedily gave place to frames. My experience after several experiments, showing that such as were furnished with the latter, like the one alluded to in your last number, gave much superior results. This I can only account for on the supposition that the space between the ends of the frames and the box, afforded superior means of ventilation, and access for the workers to pass from box to box in frame over bar hives.

After once fairly experiencing the superior results attained from the Stewarton Hive and System, over others of which my authorities on the bee treated, it naturally occurred to me that as those writers seemed in total ignorance of such a system, that it had merely a local celebrity, and my curiosity was prompted to discover who was the inventer. It was perfectly clear there must have been some master-mind who designed it, and by his successful as well as profitable manipulation, had so convinced his neighbours of its superiority, as to induce plain working men (no easy task) to abandon their cheap old straw skeps, and invest their hard-earned savings in new and comparatively expensive wooden hives, and that they and theirs tenaciously clung to them ever after, was the best proof to my mind, of their superiority and profitableness, and as the discovery had not been made generally known, the discoverer was most probably one of themselves.

So far as I have been able to trace, the Stewarton Octagon Hive was invented in the year 1819, by the late Robert Kerr, Cabinet Maker, Stewarton. He is described by olden Ayrshire bee keepers, who knew him well, as a most intelligent, upright man, besides being a particularly ingenious and neat handed tradesman, and the boxes he turned out were far superior to any to be had now-a-days. They were completed with so much care, that the slides of one fitted every other box with the greatest exactness: he was in addition, a most enthusiastic apiarian himself, so much so, as to cause him to earn among his contemporaries, the sobriquet of "Bee Robin." Some of his sons, who had emigrated to America, returned to their native land, and persuaded the aged bee master to dispose of his property, and accompany them on their return to the land of their adoption about eighteen years ago, where he peacefully ended his days some two or three years since.

At the threshold of such an enquiry I am quite prepared to be told by Major Munn, or some of your well-read correspondents, that Octagon Hives and the Storifying System are by no means so modern an invention, and that for nearly two hundred years they have been in operation. I am well aware that John Geddie obtained a patent from King James II., for his Octagon Storified Hives. Neither was the invention that of Geddies, as Moses Rusden, "an apothecary and bee master to the King's most Excellent Majesty," who granted and sold licences on behalf of Geddie and his partners, "to make and use the same," admits in the "Epistle Dedicatory" to his quaint old work on a "Full discovery of Bees, published in 1687, that the "Transparent Hives," first shewed to us by Dr. Wilkins, late Bishop of Chester, a most eminent member of your (Royal Society at Gresham College) Society, which have received several variations and improvements by one Geddie, and since by myself, &c." Although Rusden first saw the Transparent Octagon Hive (so called from the front and back windows to each) in the possession of Dr. Wilkins, he does not say he was the inventor, that individual's name I fear has been lost in the mists of antiquity, but should be deeply gratified if any of your contributors are able to throw any light on this interesting point.

But what more materially affects the present enquiry, was the Octagon Hive as introduced by Kerr into Ayrshire his own original idea? or had he seen or read anything of Geddie's Patent? I would rather incline to the supposition that he had, but as I cannot find the slightest vestige of proof, it is quite possible it may have been purely his own invention. That the same idea occurs to different minds at the same time, is a well-established fact, and I need not adduce a more pertinent proof than that the moveable comb frame was invented in Germany by the well known pastor, Dzierzon, and on the American continent by Rev. L. L. Langstroth simultaneously without the

slightest hint or communication, the one with the other, in fact they were mutually ignorant of each other's existence ; and an additional claimant to that high honour is your excellent contributor, "A Lanarkshire bee keeper." In a letter before me he mentions he had frame hives in use twenty years ago, and a bee keeper near him possesses a hive 60 or 70 years old, with ribbed bars, forestalling the useful invention so well-known to bee kepers as the "Woodbury rib." Truly we may say with Solomon, "There is nothing new under the sun."

But supposing Kerr had seen Geddie's patent, it consisted simply of a series of octagon boxes of uniform depth, communicating by a five inch square central hole in each. Additional room was afforded by adding another box underneath, the upper being removed, as likely to contain most honey, which was necessarily a conglomeration of different mixed honey, pollen, and grubs, and with a pang of apparent regret. Rusden narrates, that these upper breeding boxes were only presentable at the royal table, and to be inspected at his house in the "bowling alley" for a limited period, owing to the corrupting nature of their brooded contents.

As the crude steam engine of Newcomen existed before James Watt's day, and as the repairing of a model of that engine committed to his care, drew Watt's attention to the subject, and bringing his fertile brain to bear upon it, the happy thought of the separate condenser, and the numerous other improvements following in its wake, was called forth to make steam, the mighty power it has become. may not the Vale of Clyde claim for Robert Kerr, another son, although in a comparatively lowlier walk, the invention of the separate honey condenser, if I may apply the term to his shallow supers, the bar and slide, the combined prime swarms, and other ingenious contrivances, by which means bee keeping is revolutionised and results attained, during the short lived honey harvest of our northern chilly clime, of which the straw hivists of the sub-dividing swarming plan little dream.

No doubt from the shallowness of Kerr's breeding boxes, he would readily borrow a box of comb, to receive a second swarm, or beat out ; or another weightier one to save a weak colony from starvation, and in our day with every individual comb moveable at command how pleasing a task it is at the autumnal or spring examination of stocks to draw the slides of our octagon colonies, and exchange the over-loaded combs of the strong with the empty of the weak, either for brood or store, and thus readily equalize their strength, to keep the entire apiary in proper fettle without the smallest outlay for feeding. And yet despite these strides of progress, we have bee keepers such as Mr. Pettigrew, and those of his Manchester school, who from no other ostensible cause than possibly sympathy with that growing thirst after the gothic and antique, boldly argue that a roomy straw skep is the *ne plus ultra* for pure comb and successful bee keeping !

My allusion in a former letter to how I knew the advantages of moveable combs from the commencement of my career as a bee keeper, may be worth noting. Hearing of washing tubs full of honey comb, having been removed at the destruction of colonies of bees, established in the roof of an old mansion in our district, and a neighbour utilising a similar possession by getting a portion of the laths and plaster removed, and a board with buttons to keep it in its place substituted, it was with no little pride he would order his butler to cut out and set on his breakfast or dessert table, as the case might be, before admiring friends, honey comb, *warm* from the hive, the bees having been previously stupefied with tobacco smoke, but he always failed to induce them to work out from the spaces they occupied. To solve this problem, I had a couple of those in our roof similarly opened, and by helving off the space immediately *below* the combs, compelled the bees to carry out their work horizontally into boxes open behind, with so much success, that the first season I harvested half a cwt. of most beautiful honey comb. Watching their proceedings through the front windows in boxes, I became deeply interested in my little tenants, and diligently read up the subject. But so situated, my apiarian operations: instead of being conducted during leafy June, in a balmy atmosphere, had of necessity to be carried out during mid-winter, either when "Boreas with his blasts did blow" most bitterly, or during the prevalence of keen frost. Then was my opportunity, and when well into the night, I wrought carefully, removing my bracketed shelves, and in their stead substituted tier upon tier of moveable bar frames, but to fix in these properly was the difficulty. It made capital practice for the youthful apiarian. Stretched on my back, with upturned countenance, in uncomfortable proximity to the seething dark mass, which emitted an ominous angry buzz at every click of the screw driver, but beyond an odd dropper on the face to give an additional turn to the screw of courage, all went well, and the following season quite a haul of honey was reaped from my combined horizontal and perpendicular scheme. But unfortunately, although I carried the key of my lofty apiary, necessary opera-

tions during summer, set free a few workers now and again, and these somehow found their way out below the door, and complaints of soiled blinds followed. Then an irate maid was foolhardy enough to assault one of my poor little innocents with her banister brush, while peacefully winging its way, and rudely felled it to the ground, not killed but merely stunned, and was it to be wondered at that it was up and at her, closing her right eye? Then followed a report of a swollen knee, in short, by universal female suffrage, my indoor apiary was rated an out and out nuisance, and who could resist such odds? I was consequently obliged to indulge my growing passion by purchasing a couple of stocks from a weaver at the village, and fight it out in the garden, transferring the contents of his musty old skeps to my improved bar and frame hives.

It is a noteworthy fact that these runaway swarms invariably esconsed themselves in ours as well as our neighbour's roofs, in the portion having a *northern* aspect, whether with the view of enjoying a more thorough winter dormancy with a corresponding saving of store, or being cooler in hot summer weather I never could define, although from some necessary repairs to the southern portion we found that in very olden times they had been established there too, from the remains of stretches of combs, measuring from six to eight feet in length.

A RENFREWSHIRE BEE KEEPER.

Correspondence.

WHICH IS THE BEST HIVE?

To the Editor of the BRITISH BEE JOURNAL.

SIR,—I have read with much interest the letter of "A Renfrewshire Bee Keeper," in your Journal for this month, advocating the Stewarton hive, and can endorse his recommendation of the same. Still I feel confident that the newly-introduced "Carr Stewarton hive," which embraces all the advantages of the Stewarton, combined with the principal excellencies of Mr. Carr's admirable hive, is far better than any other. Trial of this hive is now being made, side by side with the Stewarton and also Woodbury's, and the results will be supplied to you in due season. The "Carr Stewarton" hive is fifteen inches square, and consists of two body boxes, each being six inches deep, and a honey box four inches deep, &c., &c.

Yours respectfully,

Totteridge. C. W. SMITH.

THE BEE CLUBS.

DEAR SIR,—Hurrah! for the Clubs: now I feel that, as Artemus Ward remarked, "We are movin' onwards." I had little thought when I made the suggestions in my last months letter that you would meet them in such a prompt and liberal manner (not that I doubt either your promptitude or liberality) but I thought that I was asking so much that I deserved a snubbing and rather expected it. You have given more even than I asked for, and have put the *British Bee Journal* at once within the reach of all whom it is likely to interest, namely, every individual who keeps bees. There is now a class to whom I must appeal, and from whom I hope to receive as hearty a response as you have given. I refer to those amongst your readers who, like myself keep bees, not solely for the profit to be derived from their labours, but for the pleasure we take in studying their wondrous ways, we with whom bee keeping is a hobby—but yet a paying one—must all found clubs. Let each of us call together the straw skep proprietors in our own vicinity, let us explain to them the advantages to be derived, the pleasure to be gained, and the knowledge to be acquired, by a more careful study of the habits and doings of our sharp tailed little friends, point out to them the error of their present ways, and explain how they may, in these days of unions, form one amongst themselves for their own benefit by uniting to secure *The Bee Journal* as offered by you, and a valuable prize thrown in, and my word for it Apiculture will soon take the place of bee keeping, and our land will no longer overflow with honey it will be gathered and stored for the use of Man, for which purpose it was sent. My five and twenty hives give me so much occupation just now sir, that only for having a finger in our monthly pie, I must have been absent from your columns. What with swarms and after swarms, nadiring here, supering there, transferring for myself and also for my friends, whose experience has not yet given them the necessary confidence, attending to the breeding of queens, and remedying disappointments and mishaps that will occur in the best regulated apiaries, I have plenty to do. Our bees have commenced storing honey at last, but it is very dark in colour. White clover has not yet made its appearance, nor are the limes yet in flower. The season is so far advanced that I fear for the prospects of harvest-time, but will hope for the best until the worst arrives. The Journal this month pleases me much, it is just what it promised to be—"An improving concern"—may it

continue so. I see Mr. Pettigrew "catches it" again Will not someone defend him and his straw hives just for fair play. He has not made much noise in the columns of our Journal, and Lanarkshire Bee Keeper might have let him alone, as he is perfectly harmless if not interfered with. Mr. Munn's letters will be very interesting, when we once get into the subject, as his experience is great and varied. I think I must now pull up, or you will be inclined to reply to my remarks in the language of "Fun." "Comb Mr. Novice beehive yourself."

Yours,
NOVICE.

REMINISCENCES.

SIR,—To resume the search after facts I have before me, "*The Natural History of Bees*, by Thomas Wildman, including the various methods of cultivating them, both *Antient and Modern*, and the improved treatment of them, to which are added the Natural History of Wasps and Hornets, and the means of destroying them," illustrated with copper plates, *printed for the Author*, and sold by T. Cadell, opposite Catharine Street in the Strand, 1768. The first edition, 4to volumes, dedicated to the Queen, and in which humble address he only claims "having discovered a method of preserving the lives of those innocent and useful insects, whose labour and industry has been hitherto the occasion of their death," and he hopes he has contributed to put an end to the *cruelty* and *ingratitude* which have attended the method of taking their *wax and honey*. Like a wise man, Wildman had a strong list of subscribers, headed by the King, with seven pages of the nobility and gentry of Devonshire, &c. He truly was a "Bee Master," performing those wonders that poetry and prose bring down to us, only one hundred years ago. Of his own history, there is little to learn; the book is full of learned quotations, but I am the more anxious to trace the secret of his art, this bee tamer, and the hive used for the purpose, and whether his hives gave the means of securing this wonderful success from their construction. After writing about the wax required for churches imported from Africa, and also from Asia and Greece, he mentions that Mons. Feydan de Brou, intendant of Rouen, "by an ordinance of the 15th November, 1757, has for the relief of the poor and to encourage them in their labours (by which I suppose he means the most indigent, as well as the more substantial farmers) who keep hives of bees, a diminution of capitation tax, proportioned to the number of hives they have each year." Would not this, Mr. Editor, be an excellent precedent for "the new guild of bee masters," to draw up a petition, and obtain an interview and remission of income tax of the "Chancellor of the Exchequer," instead of the farthing in the pound off sugar? Only I fear that Mr. Gladstone would extract the honey and leave us only the wax, and we should certainly still be as poor as church mice. Bee culture is a source of rural economy, the more valuable, as it is within the reach of the poorest cottager. Wildman then confesses he only gives the history of bees, as written by Messrs. Maraldi and Reaumur, as extracts for the guidance of gentlemen who have leisure and genius to found their enquiries upon, and adds "These searches will be greatly forwarded by the ease with which the bees may be come at, both on account of the better construction of my boxes, and of the command which experience may now give to every person over bees."

W. AUGUSTUS MUNN.

BEE CLUBS.

DEAR SIR,—The very liberal terms offered by you in your June number, for the purpose of bringing the *British Bee Journal* within the means of even the most humble of our fellow labourers entitle you to the thanks of the whole bee keeping community, and I hope that every intelligent apiarian will assist you in the distribution of knowledge, by forming a club of the cottagers who are keepers of bees in the locality in which he may reside. I send you herewith a list of nine, who are all willing and even anxious, now that your offer has furnished the opportunity, to read, mark, and improve. I shall hand over the prize to the one who first joined "The club," and a proud man he will be when in possession of his first bar frame hive. Having seen mine many times, he is thoroughly convinced that moveable combs are necessary for entire success in the cultivation of bees, and he will, I feel sure, use it, and not abuse it. Already there is great talk amongst the members of the club about the making of hives to the pattern you will send, and before the end of the season I expect "The Rubicon" will be crossed by all of them, and straw skeps with their many disadvantages slowly but surely go to the wall. I tell them that they will meet with many difficulties and disappointments too, but through their president they have the *British Bee Journal* to inform them "What to do, and when and how to do it," and with a little practical experience to back them, they will find that what

has hitherto been dark and mysterious in its workings will be simple and straightforward, and as sure of a successful issue as any occupation that now is simple to them. There is one question to which all of them are anxious for an answer, and that is, "What are we to do with our honey when we get it?" Now, Mr. Editor, this is a very practical question, and one to which, I am sorry to say, I could give them no very satisfactory answer, because although I had a most successful honey harvest last year, I had great difficulty in disposing of my produce at anything like a fair price. The proposed Bee Guild, if once established would, I have no doubt remove this obstacle from our path, but as the idea is yet only in its infancy, we can hardly look for much assistance from that quarter this year. Is there no market in our great metropolis for honey, are there no dealers who buy largely, and to whom honey could be sent with a certainty of receiving from them the value of the article? which of course would vary with the quality. I have somewhere read of a honey fair held at some town in Wales. Can any of your readers furnish any information upon the subject. Of course the great end and aim in all bee keeping is profit, and without a market for our produce, there is little profit to be made. I have been expecting to see this subject ventilated in the Journal, and hope that my few remarks may, by bringing the matter prominently forward, elicit information which cannot fail to be of service to many of us.

R. SYMINGTON.

The Cottage, Oxendon,
Market Harborough.

EXPERIENCE.

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SIR,—I thank you very much for your kind suggestions about my bees. When I began, not only one, but many recommended the sort of hive I use as the best, and in such very costly things, fashion must not change rapidly; besides the Stewarton hive, which is not any larger, is *now* considered by many as wonderfully productive in *good districts*, and I am beginning to suspect strongly that the difference in success or non-success is not in one plan or the other, but whether the neighbourhood of the bees is productive of the sort of pasturage they prefer.

This is the secret of the wonderful success in Scotland, where large tracts are covered with the Thyme and other small flowers that bees love, and moreover the season of flowers is prolonged nearly two months by the heather. My great desire is to find whether, with simple appliances and *letting alone* (*i.e.*, leaving to Nature, and following her guidance as near as we can discover it) bees can be kept successfully, and if in Autumn instead of being killed, each hive, besides providing for itself (or with the help of a little food) will yield 20 or 30lbs. of honey to its keeper. If this be so, I would spread bee keeping as much as possible among my friends and neighbours. If on the other hand it can only be made productive by large expenditure, constant manipulation and large outlay in feeding, it will of course fall altogether into the hands of a few who have plenty of money to spend, and time to give to it, and we shall buy a great deal of sugar comb. I find some writers recommend liberal feeding while the supers are on. I found last year by watching my bees closely that if food were given them at that time, it was at once transferred to the combs in the super and very pretty good looking comb it became, only it was not honey. I have not found it any use to plant special things for bees. We tried the first two years and the borage, &c., was never visited, but there will be plenty of thyme, mignionette, and other sweet things near them here when the time comes. I keep two of my hives in the house, and being an invalid, am not able to do the things you mention to the bees. You see we usually get stung as often as is desirable in removing the supers, and I confess to not being very fond of meddling with them, though I love to watch them and to study their very queer (and as far as I can see very little understood) ways. I want very much to have a hive of Ligurian Bees. I should like to have a hive of these under the same circumstances as the black ones, and see which would do best. I think there is another thing not fully recognised in the many books, *i.e.*, the fact of bad years, when from no cause at present understood, the bees do not thrive or work well. Several people told me last year was a very bad one. I wish the Bee Doctors could be instituted more and more as I think of it, provided they had no particular predilection for any special plan, which is apt makes one think no other will do, whereas it really appears to be with bees, as with many other things, that in favourable situations they will do in any make-shift, and in unfavourable ones the utmost care and cleverness, and the most perfect hive will not ensure a like success.

M. C. L.

Manchester.

THE USE OF DRONES.

——oo——

SIR,—In your article on Swarming in No. 2, an interesting subject for discussion is started about the possible use of drones to aid by their heat the process of hatching. The following fact may tend to throw some light on the question. This last May I moved a strong hive away to another part of my garden, and put a weak hive in its place. Of course most of the bees went to strengthen the weak hive, and the previously strong hive became weak. The point to be noticed was that they killed the drones which went with them, and I saw a great many dead every morning. As far as this single case goes, would it not seem that the worker bees did not much value the extra heat of the drones? They had a good deal of brood to hatch, and they did hatch it very soon without the drones; for the hive was soon quite strong again. But they did not intend swarming soon again, so they considered the drones useless. This case would seem to be in favour of the view that drones are propagators of the species, and help in hatching only incidentally.

T. C. BARKER.

Speltsbury Vicarage, June 17.

The above case does not in any way affect the question referred to. We alluded to natural swarming, in which it often happens that, except the drones, almost the whole population will leave its hive under an apparently uncontrollable impulse, and we suggested that in such instances it would be unwise to remove the stock hive from its position, and thus cause the drones to leave it also. It is evident that a weak stock such as our correspondent describes, could not have been in anything like swarming condition, either in virtue of its brood, population, or stores, therefore when its working population was doubled or tripled by the exchange, in a season, be it remembered, when workers could barely maintain a subsistence, it is not wonderful that they destroyed the drones, which were useless consumers only, and under the circumstances, not required as generators of heat, or for any other purpose whatever. The originally strong stock which became weak by the exchange of positions, having lost all its working population, and received only that of the weaker one mentioned, and being in a hive well charged with stores, and under its altered circumstances over charged with brood, would probably permit any existing drones to remain, as *generators of heat*, but all drone brood would most probably be destroyed and cast out as useless. We shall be glad to see this subject well ventilated. ED.

THE PROPOSED BEE GUILD.

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SIR,—I think the notion of H.W.T., who I fancy should have given more than his initials, to ensure confidence, well worthy of consideration, but

(a). I would call it company, society, or association. Guild is to me affected, still what's in a name? a rose, &c.

(b). I would make the association to consist of share holders primarily, admitting subscribing members as a second, and corresponding ditto as a third class.

(c). I would leave prize-giving to be an after addition if thought right, as they might open the door for favouritism, or the suspicion of it, which is nearly as bad. The good they do is very small, the trouble very great, and for one you please, ten are offended. If prizes be given at all I should throw open the competition to the world in general, and therefore I object altogether to the suggested regulation B in the fourth proposal.

Instead of prizes I think the association might arrange facilities for trying and reporting on suggested improvements, and advertising their verdict in the *British Bee Journal*. A favourable notice of a new hive or bee trap or any other invention, bearing the confirmation of the committee on improvements would assure a sufficient pecuniary reward, and honour enough to the amateur inventor.

If the shares are not too large, the association strictly limited, and the whole thing proves to be a reality, and not a bubble, I should be prepared to invest enough to have "a finger in the pie."

E. T. GRAYS.

Suggestion. That until the proposed market is started, an agreement should be made by the Secretary of the Guild with a leading grocer or confectioner in each important town in the United Kingdom, to expose for sale and sell honey, either in or out of the comb to the best advantage for the members of the Guild at a fixed rate of commission.

Also, that the best market prices of honey during the last week, with name of town and address of dealers, to whom the honey was sold, should be published in the Bee Journal.

DERRYHANE.

Rathdrum, Ireland.

Queries and Replies.

NOTICE.—*When queries on any subject are nearly synonymous, we only publish that which has required the fullest reply.*

QUERY No. 20.—Have you ever used, or can you inform me of any case where glucose has been used as bee food, and with what results? I had a late swarm last year, to which I united the bees of other two swarms at the end of the season, and fed with glucose, and it appears to have done very well. I under-

stand that glucose chemically is nearer in its nature to honey than cane sugar, and unlike it, is not subject to crystallize. I found it necessary to dilute it with a little water, but observed that after the bees had taken down the first two pounds they refused more until I mixed it with some sugar syrup, and would recommend that instead of water, the glucose be mixed with sugar syrup in the proportion of three of the former to one of the latter. If you think this suggestion useful, please spare a corner in your Journal.

J. P.

Gourock, Scotland.

REPLY TO NO. 20.—We believe your suggestion of considerable value, as glucose is very cheap, and we quite endorse your experience with it. ED.

QUERY NO. 21.—Will you kindly inform me how I can keep my collateral boxes in Nutt's hive at a sufficiently low temperature to prevent breeding cells being formed in them. Each box is furnished with a good sized perforated tin pipe, but the bees wax these perforations as soon as they take to the box. On removing the boxes I always find a quantity of brood comb, and have the greatest difficulty in consequence in getting the bees to leave it. I am generally obliged to resort to smoking, and in doing so run the risk of killing the queen. I have now a side box nearly full, but I question much whether (after giving more room,) I had not better leave all quiet until September, when I shall not risk destroying the infant bees. Will you advise me on this subject.

J. M. W.

Bridgnorth.

REPLY TO NO 21.—As you say you always find this difficulty with your collateral boxes, we presume the combs in the central or breeding apartment proper are old and surcharged with pollen, so that the queen, to gratify her propensity for ovipositing is compelled to enter the collateral spaces. We have little faith in ventilation, as a means of preventing breeding in them under such circumstances, as the bees could maintain sufficient heat for that purpose, even supposing the tops of the collateral boxes were removed altogether. Such a course would simply *retard* the production of brood, and at this season would be an unwise proceeding. We recommend you to give more space by opening the other collateral box, and when the bees have taken possession, and have partly filled it with comb, place a large super on the top, with some nice pieces of enticing comb in it, and wait for the autumn result. Why continue to use a hive which long experience proves to be so unsuitable? Please to read reply to query No. 3 in the May number of this Journal.

QUERY NO. 22.—I should like to have the advice of yourself and others as to the best way of keeping fifteen to twenty stocks in bar frame hives. If placed on stands singly, with separate wooden covers, what distance should they be apart in the row, and one row from the other? Do you advise an apiary, or room in which you can operate, if so, what should be its dimensions, so as to have plenty of room? Should there be more than one tier of shelves, what height should these be, and what distance between the entrances? The cost of an apiary would not be much (if any) more than that of stands and covers for a similar number of hives.

J. M. H.

Sevenoaks, Kent.

REPLY TO NO. 22.—We most unhesitatingly condemn bee houses or apiaries (so called) in any and every form, when intended for more than one stock of bees. They harbour vermin, they give facilities for bees of one stock to become acquainted with those of another, and so lead to unwished for union, and desertion of hives, and they conduce to the loss of queens, which missing their proper entrance, get into some other and are killed. Whether the house is a close or open one, you cannot examine the interior of the hive without great inconvenience from the bees, and with the risk of disturbing all the other stocks in the house, and so causing fighting and robbery, which in such cases are not easily stayed. In fact, a bee house is a nuisance, and we strongly advise you on no account to build one. Forms or stands for more than one stock are equally objectionable. Disturbing one stock disturbs the whole, and often raises a "hornet's nest" about ones ears, the reverse of pleasant. Every stock should stand on an isolated pedestal. Neither hive nor pedestal need be expensive You will see in Journal of this month a Cottage Woodbury advertised, which is really an adaptation of our own, costing complete, 25s., double walled, with neat super. It is a self protecting hive, having dead air space all round it, so that sunshine or frost cannot do any harm. For a stand we recommend a square terra cotta chimney pot, planted wrong way upwards, about a foot in the ground; it will cost 2s. 6d at most, and is really pretty, and when not further required will be as useful as ever, as it is not at all affected by weather. Arranged about a garden in groups of three, about four feet apart, and with twelve feet between each group, and with a shrub or tree to break the line, so as with the variations in the landscape of the garden to isolate in some measure each group, your hives would do well, and would be convenient for manipulation. ED.

NOTE.—*Supposing a bee house to have been erected at the same cost as 20 single covers and roofs, of what value will it be to its owner if he tires of bee keeping, or finds it useless, as we suggest? and how can he dispose of it?*

QUERY NO. 23. I have to send a swarm of bees *at the time of starvation*, into South Wales. Now if I can start them on the evening of the day they swarm, or on the following day, I suppose they will not suffer for want of food on the journey, as they will be a natural swarm. But if they swarm on Saturday, and I cannot put them on rail at Banbury before noon on Monday, can I give them provision for the way, as I suppose their honey bags will be emptied before they get to their journeys' end. Would it be safe to put a piece of honey comb in the hive with them (if I had some to spare for them, which I have not) or would some barley sugar, fastened to the floor board or sides of the hive, be useful to them or otherwise? I do not see how they could have *liquid* food travel with them, and be accessible to them without injury by wetting and cloying them. I can manage about the packing, but shall be obliged for some instruction on the subject of food supply in sending swarms long distances, where they may be more than three days on the road. I read they swarm (naturally) with their honey bags full, sufficient for a three days' supply.

JOHN ENOCK.

Banbury.

REPLY TO NO. 23.—Natural swarms have always sufficient food with them to last at least three days, if sent on their journey on the day they swarm, but if they be allowed to cluster for a day or two, they convert their honey into wax, which is of course useless as food. You would save yourself an immense deal of trouble by swarming them artificially, in time to prevent the delay you dread, and if you sprinkle them with syrup before driving, they will be sure to supply themselves as if swarming naturally. Bees travel safely from Italy to this country, but they are furnished with honey in the comb, rigidly fixed in the packing boxes, which are well ventilated. As, however, you have no comb to spare, we recommend sponge as a substitute. A sardine box, from which the cover has not been too cleanly cut would do very well to hold it, the sponge (porous painter's sponge is best) being cut to fit closely

under the edges of the top, which have not been cut away. Honey or syrup poured into this will not easily run out, yet the bees can get a supply. It should be fixed to the bottom of the box, as it travels, the top being labelled "This side up." Barley sugar would soon become sticky, and bees would adhere to it, and probably die. ED.

QUERY No. 24.—I am in a fix. For the last week a very large cluster of bees has been hanging outside a very old twice nadired skep, partially plastered over, and before eight a.m. today, but few were to be seen. I was puzzled, but remembered having years ago read that the nadir came into use by a swarm having disappeared, which was discovered in an under box, or hollow pedestal. I hastened out and in the pedestal covered with a broad inch plank, I found the poor things who could no longer brook their queen's delay. The pedestal is a portion of a tree fifteen inches in diameter with a rotted hole nine inches in width in centre and a foot deep, but with no sign of decay outside. If I thought a queen was with them, the process would be I suppose, "take away the old hive, place over pedestal a new one, and either drive or by means of augur hole, smoke them up." Yesterday I drove a fine swarm from a skep into a large bar hive, moved the old hive from its stand and put on protected ten inch bell glasses. From the great numbers clustered today on the old hive, I am puzzled, as the new swarm is working, the old one not. I am so very anxious to hear from you, and must ask you to send a telegram, which will reach me early on Wednesday, and, if time admits, a note next day.

H. B.

Delvin.

REPLY TO No. 24.—It is not uncommon for bees to take possession of a vacant receptacle in which to store their surplus wealth. Mr. Pagden, in his useful little book, recommended the very principle your bees have spontaneously adopted, using American cheese boxes as stands and floor boards. It is not at all likely that the queen is with those in the log, therefore you had better proceed as suggested by telegram. Drive a swarm with the queen from the hive now on the log, and set it thereon without a floor board. Any bits of comb which may have been begun, will be attached to the under side of floor board, and may be utilized otherwise, but the bees finding the floor-board gone, and the queen being in the hive above, they will be sure to go up and join her without either smoking or driving, other than was necessary to obtain the swarm first suggested; when the floor-board may be replaced. You must not be alarmed at your stock from which the swarm was driven being inactive for a few days, they have lost their queen, and all their working population, so must "bide a wee" until the young bees hatch out and repeople the hive. ED.

QUERY No. 25.—Will you kindly inform me of the best way to introduce a Ligurian queen to a stock of black bees. I have only one stock, and do not wish to increase them, consequently the directions given in last months Journal, will not apply. My stock is in a Woodbury hive, and there seems to be a goodly number of bees. How long will it be before the population will be all Ligurians?

REPLY TO No. 25.—We cannot tell you of a better or safer mode of introducing queens than that we forwarded to the *English Mechanic* and *Mirror of Science* some time since, the substance of which is as follows: Introducing a queen into a colony not her own always requires care, but when understood may be easily accomplished provided the combs be movable. Properly veiled and gloved, a novice has nothing to fear from the bees, and if any accident happens it must be through his own carelessness or impatience. The safest mode of introduction is by the cage, and for the bar frame hive, a cage may be made of zinc with large perforations, or part zinc and part wire. When made with zinc only, a piece should be taken three inches square, with one square inch cut out of each corner; this will make a cross which, when folded, will form a cubical box without a bottom into which a new queen with some of her own progeny, should be placed, a piece of glass being used as a temporary bottom (or top) while manipulating. The old queen must of course be first removed or her absence ascertained, when a comb from the centre of the hive should be selected, all the bees brushed off it, and a spot, near some young brood, containing some open honey cells, (*i.e.*, cells with honey in them) should be chosen to cage the queen upon, the cage to be turned glass end downward, upon the spot selected, and the piece of glass carefully removed. The cage must then be gently pressed into the comb as far as its centre, so that the bees cannot undermine it, and get at the queen, and the comb with the cage may then be returned to the hive. Pressing home the cage requires care, as it is easy to press the queen's legs into the comb with it if she be on the side of it, which would cause her death, so it is safest not to press the cage at all, unless the queen is seen on the top end of it, which if of wire may be more easily seen through, than if of zinc. After forty-eight hours have elapsed, the hive should be carefully examined to see if queen cells are being raised, and to note the behaviour of the bees near the cage, when, if no queen cells are started, and the bees on the cage are trying to get at the queen with their heads and not with their tails, the cage may be removed and the queen set at liberty. If, on the other hand the bees are savage, and have begun to raise queen cells, the latter should be carefully cut away, and the combs and bees sprinkled with syrup scented with peppermint or nutmeg, which latter operation should be repeated the next day, when they will probably receive her majesty kindly. In bar frame hives these operations may each be performed in a few minutes, the bees during the time being kept in good temper by copious sprinkling with the scented syrup, or frightened with the smoke of tobacco or rags, but unless the cage be used, the chances of her favourable reception are very much lessened. Numerous plans have been recommended both in England and America, but they are not nearly so certain in their operation. It is tolerably well-known that bees know their own bee friends from their enemies, by their scent, and for this reason, scented syrup is usually given when stocks are united in autumn, so that all may smell alike. Bearing this in mind, many schemes have been adopted in exchanging queens, smashing the removed queen, and anointing the new one with her blood, &c., breaking a honey comb in the top of the skep so that the bees may gorge themselves with their own honey, and anointing the queen with some of the same, and then dropping her into the midst of them; sprinkling the bees to saturation with peppermint syrup, and dropping the new queen among them in the same state; smoking them all until they are so drunk that they vomit their honey, and become sticky, then give them their new mistress well smoked; and many other "dodges," all of which sometimes succeed, but it often happens that some of the bees have been absent, and have not been dosed,

and the queen being a stranger to them, would be in great danger of perishing as an intruder. The introduction of a Ligurian queen to a full stock of black bees, proves that the life of bees in summer is very short. As it may be presumed that the black queen continued to deposit eggs up to the time of her removal from the hive, it must be evident that black bees will continue to hatch out until the expiration of the next twenty one days at least. From that period and not until then will it be possible for any young Ligurians to emerge, but after that date the blacks will die, and the Ligurians increase so rapidly, that in a few weeks the hive will be almost entirely populated with the latter. We think we may safely say if the exchange of queens is effected during the height of the breeding season, that three months after the birth of the first Ligurian bee, not a single black worker will be found in the hive. ED.

QUERY No. 26.—Will Hybrid bees work in the same apiary with the ordinary black bees without doing each other mischief? I should like to have your opinion upon the plan I adopted last season of removing bees from supers. My hives are bar framed, and in the cool of the evening, when the bees had settled after the work of the day, I took off the super, unscrewed and took out the frames singly, and then with a little grass quietly brushed off the bees from the comb into a small tub, which I left for the night only partially covered over. In the morning the bees had nearly all returned, I presume to the hive, and the loss from the few remaining bees was very slight. Do you consider this a good method? One of the hives I treated in this manner died during the winter. It threw off a very strong swarm which has done well, late in the summer after the removal of one super. In January I found the bees dead, but the two boxes composing the hive very full of honey. The dead bees did not number more than 500. Can you account for the loss?

D. W. M.

Leigh, Lancashire.

REPLY TO No. 26.—Hybrid bees will work in any apiary, and will be found far superior to the ordinary blacks, and are not likely to do any injury to other strong stocks. Weak stocks are always liable to become the prey of strong ones of any breed, so there is no need of extra caution in regard to them. Your mode of removing the bees from your super, seems more like removing the honey from your bees, but as it was successful, it need not be improved. Our experience with bar frame supers does not induce us to recommend them, as the bees often have a disagreeable way of building irregularly, sometimes making one comb occupy two or three frames. In these cases it would not be easy to remove the honey without great waste, and we think the plan you adopted cannot be given as a rule to go by. You will see our notion of supers in June number of Journal. There is little doubt but that the stock which perished after swarming, had lost its young queen and simply dwindled away, leaving the hive well supplied with stores at a time when it was too late for robber bees to ransack it. If it had been otherwise you might probably have thought that marauders had destroyed it, a charge often brought against bees which have simply appropriated stores left unguarded. ED.

QUERY No. 27.—I have a strong hybrid Ligurian stock hive and have been watching daily for drones to enable me to divide it. This morning I found the bees bringing out dead drones just ready to hatch. They had already brought out nearly a dozen, and are still bringing them out. It is a bar frame hive. Shall I examine it, or can you explain what is going on from your past large experience. The bees seem well and are working merrily. Bee stocks are about here, as a rule, in a miserable state, many already perished, and more likely to do so, unless the weather changes, and still the cottagers will do nothing, feeding they say, makes bees lazy.

STAINES.

REPLY TO No. 27.—Your bees are beginning to feel the effects of the present unfavourable weather, and are destroying what they consider would become useless drones. Feeding as recommended would probably have prevented the waste and loss of time this indicates, as doubtless the breeding has been influenced from the same cause. It is a pity to allow a valuable stock to be so checked, as every day that oviposition is suspended, causes the loss of two or three thousand bees to the hive. Your description of the condition of neighbouring stocks is sad indeed. ED.

QUERY No. 28.—There is a round hole in the top of my straw cottage hive, made for feeding purposes, four inches in diameter. When the bees give signs of swarming, could I drive them up into another hive through this hole instead of turning the old one upside down, stopping up during the operation the entrance of the old one? If the bees store the food given them in their cells, may it be accepted as a sign that they do not require more feeding?

Yours truly,
F. W.

West Bromwich.

REPLY TO No. 28.—(1.) You may possibly get a few bees to go through the super hole, but the majority will not ascend. When the hive is upturned if a smaller hive be set on it, the bees will often cling to the bottom of it instead of going up into it. There must be a smooth free road for them, or they will not readily leave the old hive. (2.) Bees invariably store food in their cells if more than a few ounces be given, as they consume very little for actual sustenance, but it seems that they will not prepare to increase their numbers in any great degree until they are assured of increasing stores. Careless bee keepers feed until they have taught them to believe in the increase, and then, seeing them active and flourishing, "leave them alone" to perish. ED.

QUERY No. 29.—I have some bees in a straw skep which I have placed on a bar frame hive, containing ten bars, allowing the entrance to be at the bottom of the bar frame hive, will the bees work down into it, and at the end of the year can I drive them out of the skep into the hive, and will that make a good stock for the following year, or will it contain too much drone comb? Is it too late to swarm bees artificially in June, as they will not be ready before? Do you think I require a Honey Slinger?

W. N. G.

Alphington.

REPLY TO No. 29.—It is most probable that the bees will work down into the bar frame hive, and use the other for storage purposes. The quantity of drone cells will depend in a great measure on the honey harvest. If there be a sudden glut of honey there will be a good deal of drone or store comb built. June is not too late for artificial swarming, but any time when the bees are not ready, is too soon. The honey slinger must be a matter for your own decision, depending on your means, ability, the number of your stocks, and the kind of hives they are in. ED.

NOTE.—*The straw skep will be filled with honey, pollen, &c., and may be removed as a super, although of course it will not be as valuable, on account of the honey being in dirty old comb.*

QUERY No. 30.—I have two hives of common bees in straw skeps. I should like to have an Italian Queen, but the way to

join her to them I am at a loss to comprehend. Will you please give me instructions by post. W. S.

Hadfield, Manchester.

REPLY TO NO. 30.—We cannot tell you of a better, safer, or cheaper plan of ligurianising bees in straw skeps, than that recommended on page 15 of the Journal for May. If, however, you have determined to run the risk of introducing a queen alone for that purpose, we recommend you to make a circular cage, two inches in diameter, and about three and a half inches deep, using wire gauze for the sides, and perforated zinc for the bottom. Pass two pieces of wire through it crosswise, about three eights of an inch from the zinc, for a piece of honey comb to rest on, and provide a piece of perforated zinc as a top sufficiently large to cover the hole in the top of the hive, which should be three inches in diameter at least. When you receive your Ligurian Queen you must remove the black one, driving the bees and queen out for the purpose as described on page 7 of the Journal for May, when she may easily be discovered by her appearance (see page 3 of same Journal). Properly veiled and gloved, you need not fear the bees, as after you have shaken them about the hive a few times, they will be cowed, and as harmless as flies, and you may take them by spoonfuls to find her, as if looking for a bean amongst peas, and by this means will be sure to capture her. You may then return the bees to their hive, after well sprinkling their combs with syrup, flavoured with peppermint, to give a new odour to the whole. You then cut out a piece of honey comb from the top of the hive, making a hole sufficiently large to put the cage into, press a piece of it right way upwards into the cage, and down to the cross wires, unravel the wire at the top, leaving the perpendicular ends standing, place the Ligurian queen, with a few of her subjects in the cage with the comb, and put on the perforated zinc cover, fastening the same by the perpendicular wires, which will come up through its perforations. You then drive the bees down into the hive with a whiff of smoke, insert the cage and its contents, place a bottle of scented syrup on the top of the zinc cover, so that the bees can partake of it, close all in comfortably with a handkerchief or duster, and leave them for at least twenty-four hours. By this means, the bees, as they partake of the syrup will be brought into contact with the queen, and coming as she does with an abudance of sweets, she is more likely to be accepted than under any other conditions, when the hive contains brood from which the bees could raise a queen for themselves. After the lapse of the time specified, the cage should be lifted out of the hive, when the bee keeper must judge whether the bees seem anxious to caress, or slay their substituted monarch, and if there be any doubt of their amiability, it would be better to replace the cage for another day, and give the bees another bottle of syrup, after which the queen may be set at liberty. The reception of a queen in a skep is always a doubtful matter, as the conduct of the bees between the combs cannot be witnessed. It sometimes happens that from some cause the bees so closely embrace an introduced queen as to cause her suffocation, and they will often retain the dead body for several days in the hive, so that the fact of its not being immediately thrown out, is not a sure indication that she has been accepted. ED.

QUERY NO. 31.—I have always used the Woodbury bar hive for my bees, and find in manipulating them that the combs are much fastened together. Now, I should feel obliged to you if you would inform me whether there would be any objection to having nine bars in a hive, instead of ten as at present. This would give a space of five eights of an inch between, instead of half of an inch, and as I am now having some hives made, I shall be glad to know this. The Woodbury hives I have are fourteen and a half inches square, inside measure.

C. H. G.

Stafford.

REPLY TO NO. 31.—If you increase the distance from centre to centre of your bar frames in the breeding apartment of your hives you will increase instead of diminish your difficulty. Bees require exactly sufficient room between their combs to enable them to pass each other back to back as they creep about and attend to their brood, and even if *after the combs are built*, you give increased space, they will build a thin sheet of comb down between the others, so as to give *only* the necessary distance. Nature must be followed in this respect, or results will be discouraging. Bees often build small attachments from comb to comb, but in hives where the frames have proper guides and are the correct distances from each other, these are of little consequence. If your combs extend from one bar to another diagonally, the fault lies either in the want of guides or in the hive being improperly tilted when first set in its place. The frames should range from back to front Front and back should be perfectly horizontal, but the back should be raised at least two inches. Bees will then build parallel with the sides of the hive. ED.

QUERY NO. 32.—I have four or five hives that have swarmed and cast. They are full of sealed comb, and weigh about 22 lbs. When am I to put on supers or nadirs, must I wait till they seem very busy again or how?

Faithfully yours,

T. J.

June 11, 1873.

REPLY TO NO. 32.—You had better put your supers on at once. Between the first and the second swarms there were nine days hatching out of bees, the majority of which left with the second swarms, and hatching out will go on, and none of the empty cells be re-occupied with brood until the young queen becomes fertilized, when it will be important that full breeding space be allowed her. After casting, all the bees in the hive will be young and vigorous, and as there will be no brood to attend to, they will store honey very rapidly. A stock consisting of young bees with a young fertile queen in a good honey season ought to give first rate supers. When the queens are fertilized, why not trap all your drones? ED.

QUERY NO. 33.—Will it interest you to know, as most bee keepers tell one never to take *single swarms* after 10th of June or so, that I took a swarm in one of Pagden's hives last year on the 2nd of July, and it was the first one to swarm this year on the 19th of May, and now weighs 24 lbs. Will you answer the following query in your paper:—Will a swarm of bees, if they have lost their queen remain in the hive in which they have swarmed for a week or more, and go on quietly making comb, and gathering pollen, &c., &c.?

Yours respectfully,

T. J.

REPLY TO NO. 33.—There can be no greater mistake than to adopt any fixed rule in matters relating to bees and their culture. The second of July, in such a season as the present, will not be at all late for swarms, and good ones then will beat those which

came earlier and have not been well cared for, hollow. We have had neither honey nor summer weather yet, and it is now Midsummer, and bees can barely get a hand to mouth living. Complaints are general that good stocks will not work in supers, simply because they are not able to get honey to work with. There are plenty of bees, and swarming is, as is usual, in such seasons, the ruling passion. The latter question as a rule, might be replied to by a decided negative, but as it often occurs that swarms are placed on the stands from which they came, and the original stocks removed to other positions, it is possible a queenless swarm may be so dealt with, and in such a case, knowing no other location, they would probably remain there for some time, and might make some comb, but would be sure to dwindle away, or eventually unite with some other stock. It is not good policy when it is determined to place a swarm on the stand of its parent stock to do so hurriedly. There can be no loss of bees or time by allowing it to remain in the place where it is first hived, for a few hours, so that the presence or absence of the queen may be determined. If present the bees will all remain in their new abode, if absent they will return to the parent stock if on its own stand. Swarms will sometimes cluster without the queen being with them, and if hived at once and removed immediately to the stand of the parent stock, much mischief will be likely to ensue as above mentioned. Ed.

Query No. 34.—I have two stocks of bees which I thought were doing very well, carrying in pollen very fast. I have given one of them about twenty pounds of syrup, the other not quite so much. I find on weighing them that one is now only seven pounds more in weight than the hive itself, and the other four pounds only. Do you think they are likely to do all right. They are carrying in pollen still in great quantities. In reading the Journal, I find that a great quantity of honey is consumed in making wax. I suppose that is the reason why they are not heavier, after having so much syrup, as I see it is estimated they consume one pound of honey to make one ounce of wax. I have not examined my hives and I have no glass windows in them. Would it injure them taking off the top and letting in the cold air? Would it affect the brood? My hives have wooden bottom boards, but the sides and ends are of wooden framing, they are fourteen and a half inches square, and contain eight bar frames. Do you think hives made of wood will carry off the vapour that rises in the hive as well as those made of straw. I should like to see some illustrations or diagrams of hives in *The Bee Journal*. I have seen in *The English Mechanic* some descriptions of hives that I think are very good ones. I also saw that Terra Cotta Chimney pots were then recommended by you for stands for hives. I should like to know where to get them at the price 2s. 3d. each. I received the Journal all right, and have read it with very great interest, but the wonderful results therein mentioned I never expect to realize.

S. RICHARDS,

Par Station, Cornwall.

Reply to No. 34.—We presume from your query that the quantity of syrup you gave to your bees was given during an extended period, otherwise we cannot understand how stocks, which have received near 20 lbs. weight of syrup each can now only be of the net weight (including their combs) of seven and four lbs. respectively. It is tolerably certain that such stocks would not require new combs as you suggest indeed they would not be sufficiently strong to make any. Their first care would be the increase of their numbers, but that would ensure increased weight, even supposing they thus consumed the syrup you gave them. If they are carrying pollen freely, it is a good sign, and doubtless they will increase, but being so very light, you must not expect great things from them. If your hive had windows all round, you would not be able to *examine* their condition through them as you would see nothing but the outsides of the combs or frames. Simply removing the combs even in cold weather, will not hurt the brood, but is far more dangerous to the bees, as many fly off, stay where they happen to alight, get chilled and die, unless collected and returned to the hive. We advise you to thoroughly overhaul them and note the condition of the combs and what they contain, which you may easily do by lifting out the frames. Your wish to see illustrations of hives will shortly be gratified. The terra cotta chimney pots are sold hereabout at the price named, and doubtless may be obtained at any country pottery. They certainly form very excellent stands. Ed.

NOTICES TO CORRESPONDENTS AND ENQUIRERS.

G. K., Leeds. It is quite a matter of indifference to us how many members there are in a bee club, such as we offered, certain premiums and advantages, and we cannot dictate or govern the amount of subscription to be exacted from each member, as clubs so started among working men, who are the so-called "cottage beekeepers," may be aided by donations from others anxious to forward the movement. The full subscription amounts to only 2½d. per week, and for three subscriptions, no matter by whom advanced or how collected, we offer to send six copies of the Journal every month for a year, and give a well-made bar frame moveable comb hive into the bargain.

A Renfrewshire Bee Keeper is requested to give a reason for placing second and third supers always on top, one above the other, instead of keeping the empty one near the stock hive.

James Wilks. You will find the Woodbury hive treated of in this Journal, others will be described and illustrated in due course. The subscription for the Journal is payable in advance.

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[No. 4. Vol. 1.] AUGUST, 1873. [Published Monthly.]

DIRECTIONS TO CORRESPONDENTS & QUERISTS

1.—Write in a legible hand on one side of the paper only.

2.—Use no abbreviations which are not to appear in print.

3.—Keep every query distinct and separate, and give the fullest possible particulars, stating also the kind of hive used.

4.—When requiring an immediate reply, send a stamped ADDRESSED *envelope, or stamps for cost of telegram.*

The British Bee Journal.

AUGUST, 1873.

To enable us to keep pace with the times, we have imported from America one of the (supposed) best Honey Extractors manufactured there. It is a nicely made article of simple construction, and is sure to come into general use in England when its powers are sufficiently understood.

We can have no interest whatever in puffing the machines, or their manufacturer, Mr. R. R. Murphy, of Fulton, Illinois, as we are tolerably certain that few bee keepers in this country will be likely to import them, when they are informed that the charges for freightage rather more than doubles the cost of them. They are advertised at fifteen dollars each in America, and the bill of charges for the delivery of two of them in Liverpool amounted to £5 17s. 6d., for we are not alone in our venture, an esteemed correspondent who will probably shortly give his experience with his own machine, having simultaneously ordered another by the same maker. We have tried ours, and are charmed with the results, it is really a Honey *Slinger* in every sense of the word, and every comb we placed in it, after a few revolutions and proper reversal, came out almost perfectly dry.

Unsealed combs are quite uninjured, and those sealed are damaged only to the extent necessary in unsealing the cells, an operation depending entirely on the skill of the apiarian. We have no space for further description of it at present, but if those of our subscribers who wish to see the machine in operation will again communicate with us, we shall be glad to appoint and devote an afternoon or evening per week to the exhibition of it. We do not make this offer from any desire to increase the number of our visitors, but because we feel sure that when seen in action the machine will be much better understood and appreciated. It is too late in the year to enter into a competition *with its aid* against any hive or system *without* it, but next year, if all be well, we shall be quite willing to throw down the gauntlet, and take the field against *all comers* on any honourably consistent terms.

With regard to *visitors*, *i.e.*, those who desire instruction in bee culture, and wish to see (as well as read of) how the operations described are performed, we shall only be too glad to appoint a second afternoon or evening weekly for their benefit; and in doing so, we feel sure that while they will gain much information of the most practical kind, we shall save an immense deal of valuable time, at present devoted to correspondence, so that mutual benefit will result. We have not "A Model Apiary" for exhibition, but we can and are willing to practically illustrate all the operations of which we have ever written, and every one who thus sees for himself will become a living witness of their practicability.

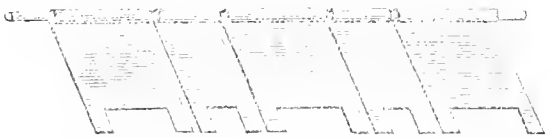
We are glad to be able to report the formation of several "Bee Clubs," in response to our suggestions

on second page of our June number, and to note that in every case the premium claimed has been a bar frame moveable comb hive, a fact sufficiently suggestive of the growing tendency to the improved system of bee culture.

WHAT TO DO, AND WHEN AND HOW TO DO IT.

As before observed, the capture of undesirable drones, although a most important matter in the economy of an apiary, is one of the most neglected, but from the numerous letters we receive on the subject, we feel that their non-destruction, arises, not so much from actual carelessness in that respect, as from the want of a ready means of effecting their extermination.

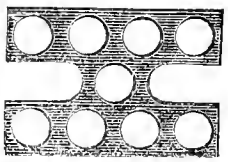
Considering the many differences there are in the formation of hives, and the various sizes, shapes, and positions of their entrances, it would we feel, be impossible to provide a trap or cage which would be applicable to all of them without some slight modification. We have already mentioned the bee trap, as advertised, as a means by which the object may be attained, and when fitted to the entrance of a hive, with a cage outside of it, from which only worker bees can escape, there is little doubt but that the drones would all speedily be captured. As a means whereby the bees may obtain re-admission, the hive should be raised upon wedges just sufficiently for that purpose.



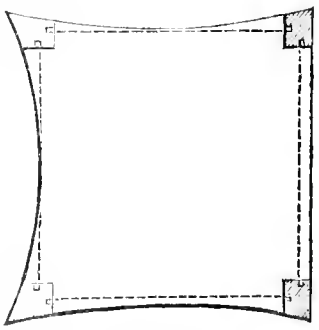
A Nantwich correspondent has forwarded us a drone trap for appproval, the principle of which is almost identical with Aston's bee trap, with this advantage that the workers may return by the way they came, while the drones are left out in the cage. The prime feature in the case will be understood through the engraving here exhibited, which as our correspondent observes "acts like a charm."

An ingenious workman of Desborough has arranged a further modification of the principle which he says cleared his hives "in no time." The zinc "falls" are suspended on one wire, and fall on to another, which is so arranged as to keep the bottom edges exactly three sixteenths of an inch from the floor, so that workers only can return under them.

They are both clever adaptations of an old principle, and some care is requisite in making the traps or falls of the necessary exactness, so as to ensure correct working, and we hope we shall be pardoned if we suggest as a still further improvement, and as an aid to the amateur zinc worker, that by the adoption of perforated zinc, of exactly three sixteenths of an inch calibre, a ready means is offered by which all the traps or falls may be made mathematically correct, and further facilities given for the return of the workers to their hives.



The manufacture of a drone trap being then an easy task, we further suggest that it be made so as to be adaptable in a moment to every ordinary hive. If a board be cut of the shape shewn in annexed engraving, one side being plain, and the three others having different curves, it will fit the fronts of almost all the varied hives in use. Pillars should be fixed at the corners as shewn, and the traps or falls fixed to each side, as suggested by the dotted lines. Another board laid on top would complete the drone trap, which could then be applied to any hive at any time of the day, and all drones would then be most certainly trapped either on leaving or returning to the hive. Such a trap might be made of almost any size, but of course small ones would be more likely to choke than large ones.



As the time will shortly arrive for depriving stocks, &c., of their honey, we would remind those who intend to transfer or unite their stocks, that it is useless to attempt to unite any but those standing next to each other, unless one of the two to be united has been brought from a considerable distance. It will be manifest that stocks which have been used to any one location, will not suddenly adopt themselves to any other near by, unless after natural swarming, and it is from

a knowledge of this fact that artificial swarming has been adopted, and is so certain in its operation; for as well-known in that operation, if the parent stock be moved only a few feet, the bees on their return cannot find it, but go to the hive on their own stand, and form the swarm. It must then be remembered that those stocks which are to be united, must be brought gradually close to each other, or must be taken at least a mile from their present location, so that there may be only a remote chance of their return. Bee keepers in different villages could render each other great assistance in this matter, and could afford each other personal aid in this breaking up and uniting, directions for which were given in the June number of Journal, page 8, and for July, page 34.

Many bee keepers write to ask how to transfer their bees, when they simply want to know how to unite those of two or more stocks which have been robbed of their combs. Next to the diabolical sulphur pit, the use of which cannot be too severely condemned, the stupidity of destroying the combs, which contain brood and pollen is the least defensible.

There can be no possible objection to the removal of the honey from a hive when it is done in a merciful way, but as in doing so it is quite unnecessary to destroy either the bees or their brood, their wholesale wilful murder is positively wicked and criminal.

Government has taken the birds under its protection, although their value is only proved indirectly, but bees, which are really wealth producers, are still left to the tender mercies of the cruel.

HIVES.

—o—

In our last number we shewed that although the Woodbury has an internal sectional area of 14½ inches by nine, giving a total of 130½ square inches, the comb space actually occupied rarely exceeds 13 inches by 6½, which gives an area of 84½ square inches only, and shows an unoccupied space in the hive of about one-third its whole contents. It must not, however, be concluded that this space is all lost, as much of it is required by the bees as the means of passing round and under the combs. In all hives with fixed combs it will be found that the bees attach their combs firmly to the top of the hive, from which they hang, with scarcely any attachments to the sides or bottom, spaces of from ⅜ to ½ an inch being left unoccupied, so that the bees may travel round them, from one comb to another.

It may, however, be interesting to enquire how so great a loss of space is caused as that above mentioned, and whether it may profitably be avoided, due regard being had to the necessities of the bees and the convenience of the bee keeper when operating with them. Beginning with the top of the hive, is there any necessity for the ⅜ of an inch of space above the frames between them and the crown or honey board?

It is left as a means by which the bees may travel over the frames, and seems to be a great convenience to them, but we shall perhaps, better understand its value if we observe their conduct with regard to it; and judged by them we think its value doubtful. Of one feature we are certain, viz., that when the hive is overcrowded with bees, and the necessity for this space, as a means for travelling about the hive, seems apparently greater than under any other conditions, the bees almost invariably crowd it with honey comb, leaving passages at irregular intervals only, not more than sufficient to enable two bees to pass each other in them. This manner of building above the frames causes great inconvenience and loss in the management of the hive, for in removing the crown or honey board for any purpose, it often happens that some hundreds of these honey cells, which are attached to both the crown board and the tops of the frames, get broken, leaving a great number of bleeding surfaces on which the bees crowd themselves to lick up the running honey, so that it is impossible to replace the honey board without great danger of crushing the bees on it against those on the top of the frames, and yet if it be not quickly replaced, there is other and greater danger that robbing may be commenced, which, when the hive attacked, is reeking with honey, as it would be in such a case, is not easily stayed.

The spaces at the ends of the frames are conveniences more in accordance with the natural habits of bees, as will be found on examining any hive with fixed combs, for the attachments of the ends of the combs to the hive are very small; in fact, often insufficient to steady the combs when the hive is being removed from one stand to another, and this we suspect is the origin of the stupid plan of placing sticks across the centre of the straw skep or box hive, which were doubtless intended to steady them, and prevent their falling, and even now similar measures are recommended by many, who forget that to prevent combs falling, the support should be at the bottom of them.

Seeing, then, that the bees almost invariably crowd the space above the frames with comb, and that every time the crown or honey board is removed, the comb gets broken, and when replaced needs repair, we think it may be safely concluded that it is not necessary to them for the purpose for which it was intended by the inventor of the hive, but is obnoxious rather than otherwise. That its omission in bar frame hives is not detrimental to the well-being of the bees is proved by the success with which bees are managed in the Stewarton hive, where the spaces between the frames, or bars, are filled with slides fitted in grooves to receive them, so that the bees have no means of passing transversely from comb to comb, except under them, unless by means of what are called winter passages through them, which are said to be purposely left by the bees, but are always more the result of accident than their own design. The chief loss of space, however, in a bar frame hive, is at the bottom of it, and in the Woodbury principle the loss is greater than in any other. As before stated, bees will not build their comb down any nearer to the bottom rail of the frame than they would to the bottom of the hive if the rail were not there, and consequently the space occupied by the rail itself, and all the space below it, is absolutely wasted, occasioning a loss in the depth of the hive, amounting without reference to the waste of space above the frames, to exactly an inch, or one-ninth of the total contents of the whole hive.

This is accounted for by the thickness of the rail, which is five-sixteenths, the rack, five-sixteenths, and the space beneath the rack (which is important under the circumstances, as otherwise the bees would not carry out the *debris* from behind it), which is $\frac{3}{8}$ of an inch.

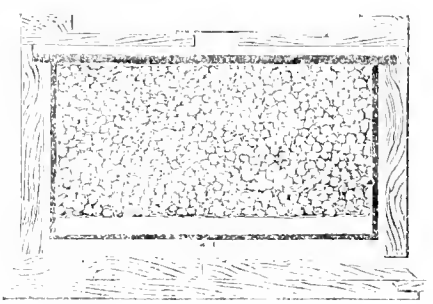
The notches in the rabbets and bottom rack we have always denounced as most objectionable features in the Woodbury arrangement, and cannot consider any hive perfect which contains them or any modification of them. In addition to the danger of crushing the bees when replacing the frames of comb after manipulation and examination, often causing the loss of valuable queens, there is the still more awkward fact connected with them, that the frames cannot be moved in a lateral direction, in the slightest degree, until they have been prized out of the notches at either end, and in doing this it often happens that the bottom corners are forced against the inner front or back of the hive, to the great danger of the bees passing round them. It often happens also that the combs are not quite so straight, or even as may be desired, but lap or overhang each other, in which case the prizing up of a comb will bring it into contact with another, often smashing both bees and comb into a honied pulp.

The crushing of bees, causing as it does the emission of their sting poison, which has a powerful odour, is most irritating to bees generally, and often causes a cloud of them to rise, and attack the operator simultaneously, flying at him like a shower of small shot, and stinging most viciously, not only the person, if they can get at it, but the clothing also, until it is so charged with their venom as to excite the whole apiary.

We make these observations at the risk of being thought hypercritical, not because we have a perfect hive of our own to submit to the bee keeping public, but because we believe our duty, as journalists, requires us in their behalf to do so, and while we know (to quote the words of our lady correspondent, page 42) that "in such very costly things (as hives) fashion must not change too rapidly," we are anxious to direct their attention to what we conceive to be the chief defects in the bar frame system, so that in future they may be avoided.

The majority of bee keepers who have adopted the bar frame hive will coincide with the opinions here expressed, and would doubtless be glad if, without much expense, the imperfections of their hives could be removed, but any attempt to introduce a new hive, before the question at large has been thoroughly ventilated, as we trust it will be in the pages of this Journal, would, we are sure, be scouted as another attempt to impose on their credulity.

As, however, almost all the evils which we have enumerated are due to the notched rabbets in which the frames rest at the top of the hive, to the bottom rails of the frames themselves, and to the notched rack by which they are kept in place below, we venture to suggest a means by which their necessity may be obviated, and the full space in the hive made available for the bees.



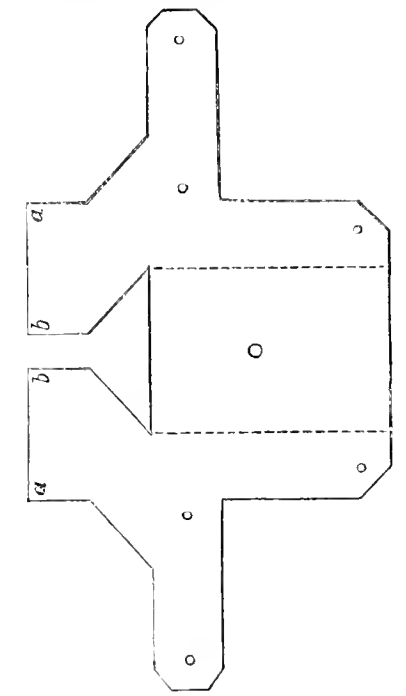
In effecting this desirable object, which will really be the overcoming of many difficulties, it is obvious that some alterations will be necessary, and that those proposed may be better understood, we here produce a section of a Woodbury hive, exactly as it would appear if cut through from front to back. It is drawn to a scale of one-eighth of an inch to the inch, and except that there is a little too much space shewn between the bottom of the comb and the rail beneath it, it is perfectly correct, and needs no explanation, except with regard to the seeming double thickness of the floor board, one half of which is due to the clamp fixed across the underside of it, to prevent warping.

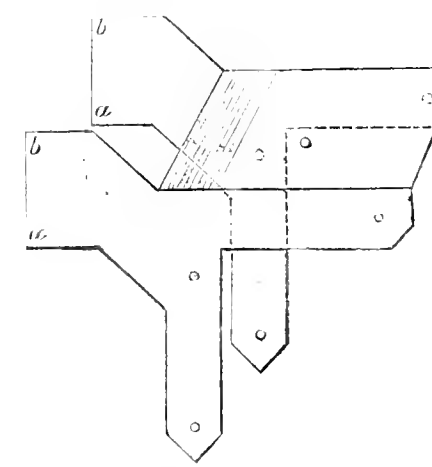
It will be seen at a glance that the bottom rail is of no use whatever as a support for the comb, for except in solitary instances they never build nearer down to it than they would to the floor board, if it were not there. Therefore, except as a means of strengthening, and giving rigidity to the ends of the frames, it is worse than useless. Its necessity in conjunction with the notched bottom rack as a means of keeping the frames in their correct positions has already been ignored, Mr. Carr, of Manchester, having adopted an arrangement by which that object is effected by the ends of the frames only, which slide into grooves, cut into a wedge-shaped fillet, fixed against the back of the hive close down to the floor board, a measure which answers its purpose exceedingly well, and is a great improvement on the Woodbury arrangement.

Our suggested improvement, however, goes much further than this; we propose to remove the bottom rack, and rail, and to cut away all the solid spaces left between the notches in the rabbets, in which the ends of the top bars rest, and to cut off the projecting ends of the top bars also, substituting metal corners of most simple construction, which will effect not only all that those "impedimenta" were intended for, but will prevent all the evils which arise from their use.

If a piece of card be taken of the pattern shewn in the next engraving, and cut half through at the dotted lines, it will fold into the shape shewn in the next figure, which, if made of tin plate, and holes punched as marked in the diagram, will be applicable to all existing frames, having a width of ⅞ of an inch, and will at once afford the proposed improvement.

It will be manifest that the metal corners being [illegible] in one piece if fastened as suggested, to the top rail and ends of the frame will hold them perfectly rigid, and the projections, *a*, *b*, will rest upon the rabbets exactly as the projecting ends of the frames did formerly, but there will be these advantages: there will be no crushing of bees in notches, either at top or bottom, nothing to propolize, and the frames, when one has been removed, will be capable of lateral movement. It will also be observed that while *a*, *a*, rests upon the rabbets, *b*, *b*, will be level with the top of the hive, so that the crown board will press upon those parts and hold them in their places.





There is one other feature in the arrangement which greatly tends to simplify the matter, which is this, that each of the projecting ends of the metal corners to be bent outwards, so as to form distance guides in lieu of the blocks between the notches, which have been removed, and thus will ensure addi-

tional firmness to the frames of comb, and their correct distances from each other. The metal corners may of course be made in any modified form; they may be cut out of any kind of waste tin; any one with average intelligence can make and fix them, and they will last a life time.

THE STEWARTON HIVE AND SYSTEM.

The question has been asked, in last month's number, why I recommend "placing second and third supers always on top, one above the other, instead of keeping the empty one near the stock hive," and my reply is, our industrious little favourites abhor a vacuum, and invariably display too good generalship to have so valuable a part of the commissariat without the lines. Placed as your querist puts it, experience has shown that on a break of good honey-gathering weather, bees in such circumstances frequently beat a retreat to the stock hive, carrying the contents of the super along with them, and every bee keeper must have noticed, on removing a stopper from that objectionable central hole in a common straw skep, with what pains and what disadvantage they cautiously feel their way by building their combs, and raising them in an upward or backward manner, till they can attach them to the top of the super, before they, as it were, hoist their flag, and claim the added territory as all their own.

What would the workers of the manufacturer or store keeper think of being compelled to the additional labour of carrying their respective loads through a projected addition to the premises? no more would our workers relish it. It is a sound storifying rule that additional breeding space is invariably afforded by giving it to elongate such combs downwards, termed nadiring, in like manner, honey being always stored in greatest security, at the point furthest removed from the entrance, towards which the bees gradually contract their lines as cold sets in; consequently, additional space is given for this by an extension of room uppermost, termed supering. In both cases it must be continued as uninterruptedly and compactly as possible.

So managed, how beautifully and systematically does the work proceed, the greater weight as it ought to be at the base, the all but completed super comes first in order, which on removal, gives place to the next, well on for full too, the third possibly half filled, the fourth all combed, with yet but little honey, five and six as receptacles of the partially employed, who relieve the tedium of waiting by nibbling and reducing the thickness of the wax sheet guides, instead of, as in common straw skeps, hanging a mass outside, roasting in the morning sunshine, or be-draggled with the passing showers. With the rise of the temperature and the flow of honey, in such hives, bees expand like the mercury in the tube of a thermometer, and on its cessation shrink in, falling back on their base.

While drawing these remarks, under the above heading, to a close, I would like to recapitulate some of the advantages of the Stewarton to the practical bee keeper, over more vaunted and fanciful hives. First then as to form, all the best of the old writers on the subject are agreed that the nearest approach to a sphere (an Octagon) is the most suitable shape, and certainly in my experience I have found that in such, the heat is much better concentrated than in square hives, where it evidently must be weakened by being dissipated in the corners. In the latter I used always to be obliged to remove the outer combs to prevent mouldiness during winter.

Objection may be taken to the unequal length of the bars in the Stewarton, but as the shorter ones contain chiefly honey, they are exchangeable of course, with all other octagons; the four central ones containing brood, I move about during the working season, among my square hives and nucleus boxes for Queen propagating purposes, with as much facility as if all were in square frame hives.

Then we have that ingenious contrivance, the slide. All the honey gatherers of the end combs are at once admitted into the supers, without in the least disturbing the Queen or train of nurses and pollen collectors of the central section, and by a like contrivance these honey gatherers pass from super to super, as if in reality in one box, and I have taken off four such supers at one lift, wherein the combs were constructed with such regularity, that an uninterrupted view could be had between all, saving a half inch variation on a single one. The shallowness of the supers, too, ensures the better classification of the honey with the progressive filling as alluded to above, ensuring the thorough completion of each, which enhances very much their pecuniary value.

To the man engaged in business, away from his apiary during the day, how pleasantly and profitably he can manage his bees, in Stewarton non-swarming colonies, compared to the worry and annoyance caused

by the watching for and loss of swarms, and the troublesome and expensive feeding, too often of such comparatively weak and profitless stocks. Colonies, when once fairly established, as a rule, rarely require the least feeding ; indeed, they generally store both honey and pollen in the body of the hive in excess of their wants. The time required for adding a super or nadir in an evening or morning, is comparatively trifling. and on the Saturday half holiday how pleasant a task the removal of completed supers, and to watch the rush and delightful music emanating from such a throng as pour in and out from their triple entrances, to the comparative listlessness of the odd droppers on the landing boards of the common straw skeps.

Here, too, we have that endlessly disputed point, which is the best size of hive? solved—how manifestly absurd is it to dogmatise, that one particular size is the correct thing, for every swarm, locality, season and Queen's production, whereas here is a hive, small, when it is invaluable, that every degree of warmth should be husbanded for the production and maturing of brood in the early cold spring months. With the rising temperature and increasing population if swarms are not desired, but honey wished for, it is extended in keeping with the population that otherwise would have hived off, finds space for them, and as many more swarms as the bee master chooses to add, and can meet the productive powers of the most prolific Queen that Alpine heights have ever given birth to. In short, in the hands of the practical apiarian, it is adaptable telescopic fashion to exactly focus all seasons and districts be they good or bad.

A RENFREWSHIRE BEE KEEPER.

Correspondence.

REMINISCENCES.

To the Editor of the BRITISH BEE JOURNAL.

—o—

SIR,—I purposely put "Daniel or Thomas Wildman" in my first letter on the subject of having the really clever bee master of that name and period, whilst we leave the writers of such stuff as has been quoted in some periodicals, regarding "Daniel Wildman's" performances near the "Three Hats at Islington." I now turn to the printed evidence of Thomas Wildman being the inventor and introducer of a divided hive, to enable him to get out the bees for his various exhibitions. In the annual register for the year 1768, amongst the projects, directions for the management of bees from Mr. Wildman's treatise are given, where he recommends *straw hives* so closely resembling the Stewarton Octagon Hive, that I fear Robert Kerr, mentioned in the able article by "A Renfrewshire Bee Keeper," may have to yield the invention to Thomas Wildman after all, but Wildman honestly adds that he now proposes to alter the bee practice in England, suggests the happy thought and fact that without any communication with the Count De la Bourdonnaye in Britany, he had hit upon the same plan as the Count. The wooden boxes with hexagon or octagon sides are merely adaptations to approach the circular straw hives, in which bees have thriven best under the worst management of the most fickle bee climate of England, the absorption of moisture, and the non-conducting qualities of straw being the cause of any success, with abundant harvests of bloom for the bees. My hives (adds Thomas Wildman) are seven inches in height, and ten inches in width, the sides are upright, the top and bottom of the same diameter. A hive holds nearly a peck, a hoop is fixed on the upper row of straw of about half an inch in breadth, to which are nailed five bars of deal, full a quarter of an inch in thickness, and one and a quarter in width, and half an inch asunder from one another, a narrow short bar is nailed at each side, half an inch distant from the bars next them, in order to fill up the remaining part of the circle, so that there are in all seven bars of deal, to which the bees fix their combs, a stick is suggested to be run directly across the bars, or at right angles to them. A flat cover of straw is secured over the whole. An entrance is made at the bottom of each hive, four inches long in a piece of wood worked into the straw, (last round). Thus Mr. Thorley's (junr.,) plan of standing three or four hives upon one another, is shown, surmounting these octagon boxes, and flat topped hives with bell glasses. These particulars are fully described also in Dr. Bevan's Honey Bee, page 315, &c. Each hive should stand singly on a broader board than the hive, and fixed on a single pedestal. The internal evidence of Thomas Wildman being the bee master, is still further proved in the second edition, 8vo., 1770, and the third edition, 8vo., 1778. In the treatise 4to. edition, chap. iii page 70, full directions are given how to pile on the extra hives. These dates and directions show Thomas Wildman to be the practical and scientific bee master and not "Daniel Wildman" makes use of the

name as far back as 1773, when the trade pamphlet is printed for the author, and sold by him at his Bee and Honey Warehouse, No. 326, Holborn, price 1s. 6d. each! and that he is a mere impostor in bee knowledge, the 14th edition, 1799, page 46, proves. He gives his opinion "that the Queen Bee (so far from being the mother of all), breeds none but Queens, and that she herself copulates with the drones, as I have frequently (in the glass hives) observed many of the males attending her at the times of breeding, although at other times they seem to pay less respect to her than to the common bees." Chap. viii.! Such a bee keeper, although "a perfect Daniel," could not have performed on horseback! nor juggled the bees into the "Three Hats" at Islington on 2nd June, 1772, as has been stated. The editions at the British Museum and the quotations kindly given me by J. G. Desborough, Esq., of Stamford, from his valuable collection of bee authors, condemn "Daniel Wildman." "A great number of the hives may be seen in use, at any of my apiaries, he states in the 10th edition, 1792, but in the 4th edition, 1785, he adds at my apiary at Highgate Hill, or at any of my other apiaries, and that he always has one *mahogany hive*, with bees working in it, at his warehouse in town for the inspection of the curious!" From the evidence of the steel plates, as forgeries from Thomas Wildman, no one can for a moment doubt, as plate fig. 7, J. Mynde Sculp. "A comb, in which the worker bees are bred." A royal cell is suspended on one side. Daniel gets his engraved by *Bart. de Rakkar* fecit, as well as John Lodge. Sculp. Plate ii., the *very lines* of the cell betray the copy, but oh! the perfect copy of the three bees, Drone, Queen, and Worker! these certainly do not require the "anatomical entomological knowledge of the "Acute-Modern Reviewer" to detect the difference of a coxæ of a leg! And the latter editions, 1801, printed by F. Jones, Fetter Lane, 15th edition, and 1812, printed by J. Shaw, 137, Fetter Lane, 19th edition, price 2s. 6d., contain amongst the plates a small group of bees as a swarm! Here, then, I must leave the tradesman, and hope to show in my next actually the hive arranged for Thomas Wildman's bees, and how he worked the separated and partitioned hives, from which we have the "Madame Vicat Hive, and possibly from the History of the Hive recommended by M. Bonnet to Huber, but we must recollect we are dealing with experimental and not exclusively practical hives.

Yours &c.,

W. AUGUSTUS MUNN.

A WISE QUERY.

—oo—

DEAR SIR, — Your learned correspondent, W. Augustus Munn, in his "Reminiscences" on page 41, says, "Like a wise man, Wildman had a strong list of subscribers, headed by the King, &c.," a sentence I strongly object to. Wildman was undoubtedly a great Bee Master, and was fortunate in receiving Royal patronage; but who shewed the wisdom, Wildman or the King?

AMATEUR.

GLUCOSE.

—oo—

DEAR SIR,—Observing a query on page 43 as to the use of this article as bee food, it may interest brother bee keepers to know a little more about it. Glucose is the chemical name given to that substance from whatsoever source derived, which is identical in composition and properties to the sugar of the grape. It is found in granular masses in raisins, and is yielded in considerable amount, and secreted by flowers into their nectaries. Glucose may in large quantities be produced from starch, by one of the following methods: Add to thick gelatinous starch a relatively small amount of an infusion of malt in tepid water, and subject the mixture to a temperature of 160. At first the starch is converted into dextrin, or British gum, but in a few hours the dextrin is in turn changed into grape sugar. The diastase of the malt producing this conversion, is taken advantage of by distillers, who operate upon a mixture of malted and unmalted grain, when the starch of the latter becomes grape sugar, which, by fermentation, yields alcohol. A second method consists in boiling starch with a little sulphuric acid for some hours, when the intermediate stage of conversion into dextrin is passed through, and grape sugar is by degrees produced. Dextrin, however, in some amount remains, unless the process be conducted under pressure. Honey seems to be a composition of glucose, with uncrystallizable cane sugar, chemically termed levulose, and through these is dispersed various aromatic oils, inconsiderable in amount indeed, but sufficient to impart to the honey its inimitable aroma. As these oils vary with the sources of the honey, you have honey of different qualities, such as that of the heather, the raspberry, or the lime. We see then that glucose bears the same relation to honey, that spirits of wine or alcohol does to brandy or gin, it is the essential, but not the whole of the matter. If it were tolerably pure, bees would find in it all the nutrition they obtain from their natural food, at the same time

that they would accept it with less gusto. The "Old English gentleman" would hardly imbibe a glass of spirits of wine and water, in lieu of his accustomed "night cap." If the glucose contains dextrin, as was possibly the case with that of your correspondent, it would be less acceptable to the bees, and would account for their taking down only a limited supply of it. Cane sugar may be converted into pure glucose by boiling with the usual quantity of water, and adding, when the boiling point is reached, four drops of sulphuric acid for each pound of sugar, and continuing the ebullition for 15 minutes.

F. CHESHIRE.

The Avenue, Acton.

WHICH IS THE BEST HIVE?

SIR,—As a bee keeper in a very limited way, allow me to tender you my thanks for offering, not only to myself, but to bee keepers generally, so much sound practical information as is contained in the *British Bee Journal*.

It is not in that alone that the excellence of your spirited enterprise consists. What I look upon as the most judicious step (in the right direction) that has ever been taken in bee culture, is due to your kindness and forethought in offering and giving us the benefit of your practical experience in such quick replies to our queries.

Nothing can be better calculated to encourage the wavering and the disgusted to make further trial, or to induce the many with limited means, to increase their comforts and the cheerfulness of their homes by giving profitable bee keeping a fair trial, aided by your advice, and the example of the advanced apiarians who contribute to your Journal.

Cases often occur when even the most practical apiarians may be glad of advice; but having to wait for it until the publication of the succeeding Journal, many disasters may in the meantime occur.

If such be the case with old hands, the sad position of young apiarians when bewildered may easily be conceived, as may their satisfaction when the post brings plain and easy instruction by which they may extricate themselves from their difficulties, penned by the courteous Editor of the *British Bee Journal*.

The answering of queries at the opportune moment is, to my mind, of far more intrinsic value than the whole subscription to the infant paper. Well! child in swaddling clothes though it be, it grows apace, and from the valued contributors already shewing light from under their bushel, I have no doubt but that the gentle current of peaceful waters, in which, like a vessel, it has been launched, will bring it under your guidance, to an enviable and permanent anchorage.

The production of an easily worked and inexpensive hive is a topic I am most anxious to see discussed in your columns, for in this country, as in many others, I have seen hundreds of different sort of hives put aside as useless lumber, through the intricacy of their working.

I have no doubt but that they were all capable of easy management in the hands of their designers, but for the many, their general manipulation required more attention than the prospect of profitable return warranted.

Fearing I may appear prolix in my remarks, I now conclude, but shall again return to the subject of hives.

TYRO.

Westmeath, Ireland.

THE PROPOSED BEE GUILD.

DEAR SIR,—The letter of your correspondent, E. T. Grays, and of one or two others, seems to demand an answer, and a little further explanation relative to my proposals issued with your first number. Will you then allow me to address the following:

"To all the worthy readers of the *British Bee Journal*."

I beg to name that knowing from the first I should be unable myself to carry out my thoughts in the Bee Keepers' Guild, I communicated them to Mr. C. N. Abbott without any intention of their appearing in print, and offered them to him for what they might be worth, begging he would make what use he liked of them, adding that the only wish I had was, that they might in any degree help forward the bee keeping craft, in which, by the way, Mr. Abbott has the credit of making a bold and substantial move. They were then, given to him *absolutely*, and it was a matter of surprise to me on seeing my initials appear; his thus declining to take any credit to himself was an act of pure generosity, and not mere courtesy.

If then my suggestions are worthy of consideration, which some have kindly deemed them to be, I hope they will not be regarded less so, simply because I cannot help to carry them out.

1st. I must take leave to defend my use of the term *Guild*. The meaning of [illegible] will be found in Bosworth's Anglo-Saxon Dictionary, under the

"A guild, society, or club, where payment was made for mutual support, like our benefit societies," but if any would include in that term lodges, badges, ranks, &c., I am not aware of any objection to establish it (the Guild) on such a scale. However, if a more befitting and truer English word can be found, let it be changed for such.

2nd. With regard to prizes, a careful reference to my first letter might lead many to think that a well-devised plan for providing them, and one on an extensive scale, would be highly desirable, as giving life and stability to the whole scheme. For as the numbers increased, the number of prizes would likewise, as also the number of towns throughout the kingdom where competition would take place. It was to ward off any underthoughts of partiality which led me to propose leaving the awarding of the prizes entrusted, to the leading Agricultural and Horticultural Societies If any gentleman, independent of the Guild, could be induced to offer prizes, this would materially benefit the Guild, and these prizes could be open to all, which would certainly be objectionable in the other case.

The suggested scale was not inserted in my first, for lack of room, it was but a rough cast; still the editor will perhaps kindly now do so if space will permit.

3rd. I would here add that I think E. T. Gray's suggestions as to prizes for bee gear are an extension of mine in c. 4th Prop., well worthy of consideration.

Feeling sure that many subscribers to this Journal are far more qualified to carry out my suggestions than myself, and as I decidedly decline doing so, I beg once for all to place the matter in their hands, with the hope of seeing the effort made, and that effort crowned with a happy success.

H. W. T.

	£ s.	£ s.
1 Prize of	5 —	5
1 Prize of	2 10	2 10
5 Prizes of	1 —	5
5 Prizes of	— 10	2 10
		£15

The above yearly in 6 different towns £90

The above on the supposition that 10s. would be deducted from a guinea subscription of 250 members for 9 prizes exclusively

	£ s.	£
1 Prize of	10 —	10
1 Prize of	5 —	5
2 Prizes of	2 10	5
10 Prizes of	1 —	10
10 Prizes of	— 10	5
		£35.

£125

The above yearly at one of the leading Agricultural or Horticultural Shows, the Show Stead shifting yearly.

THE USE OF DRONES.

——oo——

SIR,—A beginner in bee keeping, like myself, feels rather alarmed at seeing his name printed in such large capital letters, but still I venture to add another line or two, as you desire this subject to be ventilated. The conclusion of your remarks on my letter prove to me your experience; for what you say would probably occur with the originally strong stock, did actually occur with another hive (strong also at first) which I displaced, in order to reinforce with the returning foragers a certain other weak family of bees. In the displaced hive, drone brood was killed to a very great amount, and white grubs were carried out for some time. But the other originally strong stock, mentioned in my former letter, after displacement did kill full-grown drones; for you misunderstood me in supposing it was the weak hive strengthened that killed the drones. They were young drones, hairy, as of this year. But there was a marked difference. Out of one hive were cast white grubs, out of the other fully formed young drones. The one which sacrificed white grubs has since given issue to two very large swarms, though late, being itself a large box. The other, which killed the hairy young drones, has never swarmed at all, at least not naturally, since. Now, as you were only speaking of natural swarming in article in No. 2, you will not consider mine a case in point; but is it not worth noting that the hive which was going to swarm did not kill its full grown bees, whilst that which was not going to swarm did so? I note that with you, Mr. Editor, a natural swarm is equivalent to a large one, and an artificial swarm means a moderate sized one, that is, as compared with the whole number of original bees. Some bee-books speak of a natural swarm as being of moderate size, and tell us to imitate nature in our artificial swarming; that is, leave bees enough to cover the combs thinly, and so hatch out brood. Is it a good rule to give strong swarms a new place, and put weak swarms on the stand of the original stock? I observe that when Mr. Pettigrew swarms artificially, after taking care both to take and leave sufficient bees, he displaces both new and old hive; setting one three feet to the right, and the other three feet to the left of the original stand. In conclusion, bee keepers about here believe that the drones are of use in hatching.

T. C. BARKER.

Speltsbury Vicarage, July 9th.

We cannot see any reason for qualifying our opinion in this case, and it is very doubtful whether the hairy young drones had ever hatched out. It is tolerably certain that the hatched

drones which had flown would, on leaving their hive in its new position, return to the old stand, to which they were well used, and consequently would unite with the weak stock therein, if permitted, as in this instance, seems to have been the fact ; and it is possible that the originally strong stock had no younger drone brood in it, or as white grubs, they would have shared a similar fate to those so nearly matured.

In both instances where the strong stocks were removed they appear to us to have cast out all the drone element, which was unhatched, and as we suggested in our last month's Journal, permitted the existing drones which had not already flown, to remain alive in their respective hives as is usual with them. Excepting those hatched, which had not flown, all the full grown drones had already departed from both hives, and that one swarmed afterwards, and the other did not, was due to causes not here explained. The sizes of natural swarms depend in a great measure on the sizes and strengths of the stocks, and may be large or small, and cases often occur where so many bees go from their present hives with their swarms as to leave them comparatively deserted, and but for the presence of the drones, which generally stick to the old stand, there would probably be insufficient heat to hatch out the brood. We cannot understand if it be right, as your bee books say, to follow nature in the making of artificial swarms, how it can be right to interfere with her arrangement, when natural swarms issue. Ed.

Dear Journal,—About those drones. If I may be permitted to give an opinion, I must say that it is quite at variance with the theory advanced by you in your June number, and my experience, though small, has so far supported me therein. That drones do assist in maintaining the heat of the hive no one can deny, but their assistance is only available when least needed, namely, during the time when the outside temperature is most genial. This leads me to believe that at any rate they are not necessary as heat generators, and were not brought into existence for such a purpose. Were such the case they would be the first bees raised in the spring, so as to help in hatching out and fostering the first great laying of the queen, and they would be more useful at that time for such a purpose than later on when bees abound and the sun shines. Design being so very apparent in all the workings and instincts of bees, I contend that no such mistake as this could have been made, and if present in the hive to the extent you describe, after the issue of the first swarm, some other cause must be assigned to explain their reason for returning to the parent stock. I have had little opportunity of examining hives after swarming this season, having only had two that threw off natural swarms, and one of these being an old-fashioned straw domicile, my view of the interior was limited. The first swarm from this hive I sent to a distance the same night, and I cannot therefore say whether the drones would or would not have returned, but three after swarms which issued each contained a fair proportion of drones, which remained with their fellow emigrants in the new situations selected for them in my own garden, and when I transferred the contents of the straw hive to one with frames, which I did shortly after the issue of the fourth swarm, I found no more than a fair proportion of males left in it. The other hive that swarmed, being a frame one admitted of the necessary examination, which I made for the purpose of cutting out queen cells, about an hour after the issue of the swarm, and I found but few drones or bees either remaining on the combs, certainly not half a pint in all. This swarm after hiving, was located in a garden not three hundred yards distant, and for weeks afterwards drones were observed taking their mid-day flight from the new habitation, and although some may have returned (a fact I regret to say I did not verify by examination) still a great quantity remained with the swarm. A prime swarm if left to its own devices might seek a location far distant from the present stock, it might be many miles if allowed to take wing after the first settling, and thus render the return of the drones very problematical, although, according to your theory, their presence was so necessary. As single instances cannot be positive proof, and as I cannot for a moment doubt the correctness of the observations you have made, I must seek for an explanation of the presence of the drones you found in the parent stock after the swarm had issued. The great end and aim of the male is without doubt the fertilization of the young princesses as they mature, and as the first swarm is headed by the old queen, what is so likely as their return to the location, where their services are sure to be required. But after swarms being headed by virgin queens, and their future home so uncertain, the presence of males is a necessity to the young colony, and therefore a portion of the drone population must accompany and remain with them, that the princess may not lack a consort when on matrimony bent, and some will remain with the parent stock to mate with its future ruler. I have no doubt but drones have other uses in the domestic economy of the hive than the one I have given, and I am making much use of an Unicomb hive for the purpose of verifying some ideas I have upon the subject, at present however, I feel certain of nothing, and shall bide my time, and see result of my observations before publishing any further opinion. And now about prospects for the coming harvest. At last we have had a taste of summer weather, and honey bearing flowers being fairly abundant, some portion of their mellifluous product is being rapidly conveyed within doors by my provident little friends, and should the favourable state of the atmosphere continue for a fortnight or three weeks, my Slinger may yet groan with the labour I shall impose upon it. Already it is at work, and no one but those who have seen it would believe the rapidity with which full combs are made empty and clean to be returned to the bees for refilling. What a glorious sight after the very few revolutions necessary for the complete slinging out of the contents of a couple of combs to see the golden liquid extract of a thousand flowers flowing into the vessel placed for its reception. Surely no one with half a dozen hives would, if they could only experience its utility, be without such a labour and time saving machine. The only difficulty I have to contend with in its use is in abstracting the combs from the hives when required for emptying. My hives are so full of bees, and the little rascals have such a strong objection to my wholesale robbery that we sometimes come to blows, as I have a strong objection to wasting my time in listening to the little song they fain would sing to me when I am busy. However, I live in hopes that like the eels the old woman was skinning, they

may become so used to my unceremonious way of handling them, as almost to like it. Did they only know how anxious I am for their welfare, (combined with my own benefit) they would not, I feel sure, show such a strong inclination to damage the "eyes and limbs" of your correspondent.

NOVICE.

P.S.—I hope the clubs are prospering, I am still pushing along those who hang back, and have a few more subscriptions to send you. I tell them they must either give up bee keeping or take the Journal, and very few are willing to do the former, so I have hopes of them yet.

Queries and Replies.

NOTICE.—When queries on any subject are nearly synonymous we only publish that which has required the fullest reply.

QUERY No. 35.—Last year, in working a Stewarton Hive, I added a "Raise" (that is, a box without top or bottom) below the lowest of two boxes. I wish in Autumn to remove this Raise, but there is this difficulty, the comb is worked to the side board, and would require to be cut entirely through, so as to separate the two boxes. How can this comb be cut without breaking down the whole of it? And will it be best to cut with a knife or fine wire; or to remove the whole box, reverse it and cut at leisure, returning the box? In a Stewarton Hive, when the Queen goes up to the honey box, and there is brood, what should be done to get rid of it? The box may be removed, and a new one put on, or the brood combs may be removed, but both of these ways entail the loss of the brood.

R. F.

Ayr.

REPLY TO No. 35.—We invariably prefer a knife to a wire for cutting combs, as, if they are at all tough, a wire is apt to be soon clogged, and then, instead of cutting, will tear them. Having cut below the raise, slide in a sheet of zinc or tin, then cut through above it, raise the boxes, and withdraw the raise and zinc, and replace the boxes in their correct position. In all cases when brood is in supers or honey boxes, we strongly advise that you allow it to hatch out naturally. You thus save many young bees, and their combs will almost certainly be filled with honey later on, which, even though slightly discoloured, will give a better result than could be obtained by wasting the brood.—ED.

QUERY No. 36.—Will you kindly inform me what you think of the Honey Slinger Machine? have you tried it? what price are they? and also what sort of hive is best? have the Woodbury hive; do you think you can improve upon it? I should like your opinion of the following:—In supers on Woodbury hives I have always had a difficulty in getting the bees to take to the 2nd and 3rd supers. What I propose doing is taking away the boards at bottom of 2nd super, 1st the 1st, and leaving only one eighth of an inch of air between the top of one set of cells and the bottom of those next above it.

S. B.

Knowle.

REPLY TO No. 36.—We have no hesitation in saying that the Honey Slinger is one of the greatest aids, in rendering bee culture profitable. We have not tried the "Machine," but have slung new honey from combs by laying them on a tin dish with wirework cover, and strings from each corner which we whirled round by hand. The honey flew out of the comb in a great hurry but the skin was heavy and not easily controlled, we could not keep up steady rotation, and much of the honey was jerked out of the dish. That which was left was the brightest, purest, most transparent, and delicious we have ever seen or tasted, although thrown out of combs which had been used for breeding. We are expecting the genuine article from America shortly, when we shall be happy to shew it to subscribers in full operation. Its cost there is about fifteen dollars. The Woodbury hive is a very excellent one, although we prefer hives with larger frames. As you have them, we think the first improvement you should in future make in them, should be to increase their size. Your plan of supering we do not follow, but always place the second under the first, and as they fill put No. 3 under both of them. ED.

QUERY No. 37.—I have a very strong stock of bees in a flat-topped straw hive. For the last week or two they have been working in a square glass super, holding between 12 and 13 pounds, and also in a small bell glass on the top of that, but as I do not wish them to swarm, and they have been hanging out this morning, I wish to know whether it would not answer to remove the super full of bees (any very nearly full of honey) on to another weaker stock, the bees of which have done nothing yet but fill up their own hive. If they would agree together I thought I should by this means be able to put a large empty super on the strong hive, and prevent their swarming, and also strengthen the weak hive. Would there be any danger of the bees of the weak hive emptying the super to fill their own hive?

J. W.

Stourbridge.

REPLY TO No. 37.—We think it would be very unwise to remove the super with the bees in it from the strong stock to the weaker one, as it might cause fighting among them, and would most probably result in the honey from the super being carried down into the body of the weaker hive, besides which all the added bees left alive would return to their original stand, so that they *i.e.* the weaker stock, would only be improved by the additional supply of honey afforded; and a supply of syrup would answer the same purpose. You do not say the size of your so-called strong hive, and as strength in hives is a matter of degree, we are not quite able to judge if the sizes of the supers are nearly correct. Strength in stocks is relative, and what one would consider a strong stock, another might think a puny one. We think the reason for your strong stock hanging out, instead of continuing its labours, is caused by ill ventilation of the hive, and sudden change of temperature, and recommend you to enlarge the entrance, and give additional super accommodation. ED.

QUERY No. 38.—Please let me know how I can best diminish the number of my hives by joining them together, if possible. There is no market here for bees. I have given away four swarms, and have now nineteen hives, whereas I only want to keep twelve. All but two of these are in straw hives, some of them getting old and dirty. Is there any process by which I can remove the bees from two old hives into one new one, by fumigation or otherwise, so that they will kill one queen and unite? I have the apparatus for fumigation, and have used it before, but have never succeeded in getting all the bees from a hive by its means, as some hide themselves in the cells. What is the best fumigator, excluding puff ball, which is not easy to get? If I fumigate two and join them, what is the latest date (about) at which it may be done?

A. G.

Hull.

REPLY TO No. 38.—We would suggest the adoption of larger hives, on the moveable comb principle, so that while, as far as possible, swarming may be prevented, by being rendered unnecessary, the depriving of stocks in autumn, and the utilisation of the parts of the combs which contain pollen or brood,

as suggested on page 8 and 9 of the June number of the Journal, and on page 34 of the July number, may be easy of accomplishment. By the means there suggested you may take the honey from say four of your strongest hives, fix all the comb that has not honey in it into the frames, give all the bees to it, and thus establish an excellent stock out of the materials which are usually thrown away as useless. We never recommend fumigation, it is quite unnecessary, (and as you suggest, not always effective) and is injurious to the bees. Driving is the plan usually resorted to with bees in straw skeps, when we have to get them out, and then even though there may be a few left in the hive, they are invariably gorged with honey, and consequently good tempered and comparatively harmless. Your latter query is slightly undefined. Do you mean to fumigate the bees of two stocks in autumn, add them together in an empty hive, and expect them to prepare for the ensuing winter and spring? If so, we think it unreasonable, as many good swarms in May or June often fail to effect as much during a whole summer. They may sometimes succeed in establishing themselves by the aid of feeding constantly, but such results are very exceptional. Taking away all their combs, takes away all their food and furniture, and also all the means of recouping their numbers, and before they can store a bit of provision, they have to make new comb to put it in; a most exhaustive process at that time of year, ruinous to the strength and constitution of the bees, and likely to end only in disappointment. ED.

QUERY No. 39.—I wish your advice about what I have done as perhaps I may have made a mistake. A swarm hived June 5th, multiplied so fast that I gave them a super on the 10th, and for the last few days the bees have been clustering up the front of the hive, as if preparing for a swarm. I examined the super, and found it was full of comb. It only weighed nine pounds. I placed a super between it and the stock hive yesterday, but they do not appear to be making use of it, as some (but not so many) are still idle. The super put on was taken off another hive quite clean and empty, but I now think it may have an odour the bees do not like. Ought I to remove this super and replace it as it was? I have now got a box I could give as a nadir, but it is rather large I think. A second large swarm, too large to be called a cast, came from my stock hive on the 20th June, and it now weighs 18 pounds, skep board and all. Will it not be better to give it no super, but at the end of the season to drive the bees, take the honey they have made, adding the bees to one of the other hives? My hives are all common straw ones. I have availed myself of the offer in the *British Bee Journal*, made to subscribers, to give them advice in knotty points, so I hope you will excuse me troubling you for a speedy answer.

E. J. L.

Queensbury.

REPLY TO No. 39.—You did quite right in giving your prolific swarm the additional super, but we are quite sure that the odour of the other hive, which it has, is not the cause of their neglecting to work in it. It appears to have been placed upon the hive only the day previous to your letter being forwarded, and probably before this the bees have taken full possession. From your observation "they do not appear to be making use of it," we think it has no glass for observation, or you might *see* if they are working in it, and if so there is little doubt but that they will speedily fill it, the weather and the yield of honey permitting. If they have prepared to swarm, which in straw skeps is not easy to ascertain, the second super will not prevent them doing so, but if they do so, it (the second super) should be removed, as they will then be too weak to fill both of them completely. The other swarm we recommend you on no account to interfere with in the way you propose. It has a young and evidently vigorous queen, and nearly all the comb will be worker comb, and it will form one of your best stocks for next year. If it be full of bees and comb, add a small super by all means, and allow them to exercise their powers to the utmost. By breaking them up in autumn, you will lose the young queen, and a vast quantity of valuable brood, and the honey which you obtain will only be run honey, i.e., honey mixed with pollen, &c., which will be little superior to what you might obtain by breaking up the two old original stocks. If you were to do this latter, and fit all the combs containing brood and pollen into a frame hive, giving it both lots of bees, they would be sure to do well, and you would then only diminish your total by one. The Journal advises the means of doing this, and when the combs are free of bees, as they must be when you take the honey under any other circumstances, it will be quite easy to do.

The reason for the bees appearing to make more wax than honey is caused by their first endeavouring to fill the super space with comb, and when the cessation of the honey yield stops the work, they carry down all unsealed honey to their stock hive. ED.

QUERY No. 40.—I am disgusted with my Ligurian Bees, they will not work in glass supers, straw supers, or collateral boxes, but persist in swarming. I have ventilated the stock hives, and kept the glass supers warm, placing guide comb on the adapting board of the supers. In fact I have done everything that I know of, but without effect. They have not made an ounce of honey for me, and apparently employ themselves principally in carrying pollen for feeding the very numerous progeny produced by their prolific Queens. A neighbour who keeps English brown bees, tells me he has a stock which has half filled a glass super. What am I to do?

A SUBSCRIBER.

Dorsetshire.

REPLY TO No. 40.—We can only reply to our correspondent as we have replied to many similar querists that during such unseasonable weather as we have had, it is quite impossible for the bees of such a stock as he describes, to gather more honey than just sufficient to enable them to keep up their breeding propensity, which, however much it may disgust him, is thought one of the most important traits in the character of Ligurian bees. We know of a case (at Acton, Middlesex,) where a Ligurian stock has sent out four swarms, all of which, with the parent stock, are doing well, but of course, during such inclement weather, as we are now enjoying (?) they are fed daily. This overswarming was brought about by the accidental loss of their original queen on their first attempt to swarm, and eight days after, when the queen cells were ready to hatch, there was such a superabundance of bees as to enable them to send out the numbers of swarms mentioned during about as many days, and perhaps the present case is a somewhat parallel one. Keeping supers warm will not enable bees to gather honey, or even seek it in such miserable weather. We have no hint as to the kind of hives the bees are in, or we might be able to give more valuable advice. If they are in skeps, hive the swarms in skeps, and set them close to the parent stock. If in collaterals (say Nutts) hive in collateral boxes, keeping them distinct until the honey season arrives; if in Woodbury or similar hives, hive the swarms in what you intend

to be supers, and keep them upon their parent stock with independent floor boards. Feed both parent stocks and swarms on scented syrup, so as to ensure a sameness of odour, and when the honey season arrives, and it is simply delayed by the weather, and is sure to come, give your bees an extra dose of syrup, remove the extra floor boards, from the swarms, and unite them to the parent stocks, leaving the queens, as you do not seem to value them), to fight for "the right divine." By such proceeding the bees will have begun working in your supers, you will have the united brood and bees of their prolific queen and her daughters, and will doubtless frighten your brown bee keeping neighbour with your honey surplus at the end of the season.

QUERY No. 41.—(1). I put a 1st swarm in Stewarton hive on June 4th. On the 10th I joined to it a 2nd swarm from another stock, (at night in the usual way.) Many were dead on the cloth the next morning, and many were stung to death during the course of next day. In bee books I find it recommended to join weak stocks (when driven) to other stocks able to last the winter, and would wish to do this when the time comes, instead of feeding up or killing. But will not the same thing happen? (2). I have introduced a Ligurian Queen. Is it safe to join a driven stock as above, of common bees and queen to a Ligurian Queen stock? Is it certain that the Ligurian queen will not be killed and the common queen saved? To catch the common queen is some trouble. When I got the Ligurian Queen from Neighbour's, no drones were sent, I fear I shall have a mixed breed of bees. How is this to be remedied?

YORKSHIRE MOORS.

REPLY TO No. 41.—It is never quite safe to put bees together without taking care that they all have the same odour. Sprinkling almost to saturation with scented syrup is the best means of effecting this, and is least likely to do injury to the bees. Three or four drops of essence of peppermint in about a pint of syrup will answer the purpose well, and should be sprinkled on both sets of bees. A Renfrewshire Bee Keeper in our last number shews the disadvantages of the cloth system of uniting, as it often happens that bees do not leave it and go up, and next day, when revived, their honey sacs are empty, and they are not welcomed. Our plan of uniting bees is a very simple one. Being in bar frame hives we give each set a little smoke, remove the cover of the stock to which the bees are to be united, sprinkle the combs and bees with syrup made as above, and remove the combs from the hive, shaking all the bees from them as they are removed. The bees to be added to them are then sprinkled until they almost stick together, and poured into the hive with the others. By this method fighting is rendered almost impossible, the bees being too frightened and too full. After a few minutes have elapsed, the combs are returned, and the union is complete. In uniting a swarm of common bees to a stock containing a valuable Ligurian Queen, we always cage the Ligurian on the comb with a little square cage as described in Journal for July, page 45, and remove the black queen before the union is effected. It is always worth the trouble, which is really very little, when the bees are cowed, and filled with syrup or honey. You need not apprehend any mixture of race in the progeny of your Ligurian queen if you introduced her safely to your colony. The firm you dealt with is not likely to send out unfertile or hybridized queens, and a queen once fertilized has no further desire for the company of drones, so no remedy such as you imagine is needed. ED.

QUERY No. 42.—SIR,—The first paragraph in the Bee Journal for this month is very remarkable to us bee keepers here. It is so exactly the fact. Our bees will not go up to the supers, or Honey boxes, and we are at a loss for the reason why, the oldest among us never saw the same before. We cannot attribute it to the cause you do, as the weather here has been extremely fine for the last six weeks, and most favourable for bees, except that the nights have been cold. But our boxes are full of honey and brood, and everything looks well, except that they won't make honey for us. They hang about the door, they swarm, they make comb and honey in boxes given below, but they won't go up to the honey boxes. Can you give us any explanation of this? or tell us what to do. I should add that the treatment has been the same exactly as usual, so it really is a "strike" with us.

R. F.

Ayr, July 5.

REPLY TO No 42..—Presuming your bees are in Stewarton Hives, we think the best plan you can adopt under the circumstances will be to place your supers or honey boxes under the stocks for a time, so that the bees may work down into them, and when they have fairly begun their combs, remove them to their proper positions as supers. The probability is that having so begun, the bees will continue their labours, and fill the supers at last. In all our experience we have never known bees so ill supplied with honey at this season of the year, as they are at present, and we are now, on the 7th of of July, making syrup for feeding them. We attribute their poverty to the weather, which has been unusually dull and cheerless for a considerable period, but has been sufficiently mild to enable bees to get a hand-to-mouth living, and to store abundance of pollen, but in our case not any superfluous honey at present.

It is quite probable your cold nights may be the cause of their not ascending by rendering their presence in the hives at those times necessary to prevent the large quantities of brood becoming chilled. ED.

QUERY No. 43.—I take advantage of your offer, and ask your advice on the following points:—I made an artificial swarm from a Ligurian stock on May 15th. The swarm had filled up in a fortnight. I then put on super, which they nearly filled in another fortnight. I then rose that up and put another super (6in. ones, Woodbury size, all my bees are in Woodbury bar frame hives) which is nearly full, and in the stock hive they are building queen cells. I saw the queen in the super a day or so before I rose it up; if they swarm, it will I suppose, spoil my supers. What shall I do to prevent it. I do not wish them to swarm. The stock hive and both supers are very full of bees. I have a hybrid stock a maiden swarm 20th July, last year, and I gave them five or six frames of empty comb, and this year, at the beginning of the month, I gave them a super, which they declined to take to, and last Wednesday they threw a swarm, a small one for a first swarm, and on the Friday, two days after, another. I joined this on to the first, and in the morning, found two dead queens thrown out. I watched them carefully, so that I have no doubt it was a first swarm. I bought the original stock in 1871, and the queen was said to be a 1870 one, a very prolific one. Did she die and so cause the swarms? Is it best to put on two supers or empty one, and return it as soon as possible?

G. F. L.

Stroud.

REPLY TO No. 43.—From general complaints we think your success quite exceptional in such an untoward season. We cannot tell you of a better means of preventing swarming than the cutting out of all the queen cells in the hive, and super also if there be any there. With such a mass of bees we know this to be no easy task for an amateur, still it may be done, and if done with care and patience, the probability of swarming will be lessened, and may be prevented

altogether, but the swarming impulse is so uncontrollable that without also caging the queen you cannot be certain even for a few days or hours whether they will issue or not. We suspect they are checked in their super comb building by the weather, and are preparing to swarm because they have nothing else to do, or that they can do, and are overcrowded. There is little doubt but that the queen of the other stock was lost through some unfortuitous circumstance and that when the swarms issued they were headed by young queens. It is best to give a second super just before the first is completed. Renfrewshire beekeeper advises it on top of first one, we always put second supers under the first. The comb in supers is often required for exhibition, and cutting it out would spoil it for that purpose. ED.

QUERY No. 44.—I have this day read with much satisfaction the July number of the *British Bee Journal*, but fail to find a satisfactory reason for the number of out-clustering bees, with empty glasses and nadirs, while some straw supers are being filled. We have been getting favourable weather, and in general, work going on, apparently busily, even by some hives, that have three handfuls clustering out, with lots of nadir and super room. It would seem as if some bees are more busily inclined than others. We have had portions of days with the thermometer varying from 97 to over a hundred. Fine bee weather, with borage in flower, and lots (until just now) of cabbage, preserved in flower for them. If third, or even second swarms (of which I am certain I should have had many ere this were it not for the large size of my hives) do come, shall I join them, and look upon those so joined as stocks? Pagden recommended summer feeding, but although well inclined to do so, cannot except in perhaps two cases that have not swarmed, but have supers on, see any necessity. If time admits I shall during the month give you instances of good value from July early swarms.

TYRO.

Westmeath.

REPLY TO No. 44.—The best way to prevent after swarms, is to cut out all queen cells save one about the time the swarm is expected, or at least seven days after the first has issued. You cannot consider swarms, however large or multiplied, as stocks, for stocks have combs, whereas swarms have to build them. It is a good plan to feed bees, and we have just put 44lbs. of sugar candy to dissolve to make syrup for our bees, which really cannot get sufficient to enable them to breed properly, and we strongly suspect the weather is at the bottom of *your* ill success. There must be something in it, as bees are never inclined to be lazy. It is well-known that glass is colder than wood, or straw for supers, and may have an ill effect in your case, but if so, the weather is at the root of it all. See reply to R. D. F. in this Journal. Shall be glad to record your success with your July swarms. ED.

QUERY No. 45.—On the 17th a stock of my Ligurians threw a large swarm, (a first swarm.) I hived them in a common straw hive, as I intended afterwards to transfer them to another sort of hive. I covered the straw hive with an umbrella to keep off the sun. In the course of two hours viz., about 12 o'clock, the swarm had got out of the hive into the umbrella. I covered the umbrella with a white curtain to keep them cool. About six o'clock the swarm left the umbrella, and settled in an adjoining garden. They were hived again, and that same evening were shaken into the hive intended for them. They appeared quiet, but the next morning, the 18th, they left this hive also. They were hived again, this time in a straw hive with a ventilating top, and when quiet were shut down, so that they could not escape. Suspecting that they had lost their queen, I determined to return them to the stock hive, which was a bar frame, with a circular hole at the top. I placed the straw hive, with the swarm in it, on the top of the stock hive, placing a sheet of perforated zinc between the straw hive and the stock hive. I removed the zinc the next day. I have fed the swarm ever since, but the bees have not gone down into the stock hive again. The stock hive happened to be screwed down to its bottom board, or I should have shaken the swarm on the board, and placed the stock hive over it. Kindly tell me by return whether I can do anything else.

S. T.

Dorset.

REPLY TO No. 45.—There being some doubt in your mind as to whether the swarm has a queen with it, do you not think it would be advisable to leave them where they are and by stopping up the entrance of the skep, force them to work through the bar frame hive. By this means you will get a large super of honey, although it may be a little discoloured, and there will be a chance of the Ligurian queen continuing to reign if she be still alive and with the swarm. The probability is that she is with them, or at their first escape from the hive and umbrella, they would have returned to their original domicile. If you were to pour say half a pint of scented syrup through the hole in the crown of the skep, so that some of it went down into the bar frame hive, it would probably cause the amalgamation of the bees without loss. ED.

QUERY No. 46.—I hived the Ligurians successfully and they are doing well so far as the weather will allow them; I suppose thunder storms, like the very heavy ones we have had here to-day, coming immediately after sunshine, when a great many bees are out, must destroy a great number. If we have fine weather, about when ought I to increase the size of the centre partition? and when done, how many additional bar frames would you give them at a time (two, one on each side?) and would you leave the new empty bar frames on the outside, or put them between the old frames with comb. Even with the most favourable weather, I suppose I am not likely to want a super this summer, but can leave the making of that to the winter. Under average conditions about how soon will my Ligurians begin to hatch out new brood. They were hived 25th June? When will be the time to give them more room. I should like to open the top and examine, but it must be better not to disturb them unnecessarily or will it not matter? We have put an old skep on the top of a bar frame hive; if the former contains the wax moth, will the comb in the latter be likely to be affected if the bees work down?

C. J.

Norfolk.

REPLY TO No. 43.—Thunder showers, coming as they often do suddenly, as you observe, cause much loss of life with bees, especially when followed by cold, otherwise, i.e., if after the storm, sunshine happens to prevail, the bees are in many instances enabled to return to their hives. The time to increase the centre or breeding apartment of the hive will be when the frames at present enclosed are nearly filled with combs, and it will then be better to place an empty frame in the centre of the hive, than to add either one or two in any other part, and when that is filled, the operation should be repeated. Moist weather is more favourable to the production of bees than honey, but there is plenty of time if we get a favourable turn in the weather for bees to fill up hives and supers too. Opening the hives will not injure the bees if you take care not to injure or cause the collapse of their young and tender combs. Your Ligurians having been hived on the 25th of June, the first brood will hatch on about the 20th July. If wax moth exists in the skep, and the worms have taken possession of the combs, the bees will not be likely to work down into the bar frame hive at all. The existence, however, of the larvae of the moth about the edges and floor board of

a hive, does not indicate that they have taken possession of the combs, as bees do not naturally build them down to the floor board, and the worms are not able to climb into them. Much depends on the condition of the skep, and it is not reasonable to suppose you would place a weak stock on a bar frame hive with the expectation that the bees which have been unable to fill the former, would work down to fill the latter. You may depend upon it that if the bees are in a condition to build downwards at all, they will suffer little from the present existence of the moth and its larvae.

QUERY No. 47. Will you kindly inform what I had better do? In April I bought two stocks of bees in the old-fashioned straw skeps. May 31st I artificially swarmed one of them into a Woodbury bar and frame hive, which now seems very busy, and full of white comb, but it only weighs 9½lbs. Had I better feed them? The skep contains old comb, and there do not seem to be many bees in it. Shall I drive them out of it, and make them commence life afresh? or can I leave them until the end of the year and then join them to another stock and take the contents of the skep? June 27th I swarmed the others into a Berkshire hive; shall I feed these and can I leave the skep for a stock, or had I better drive the bees into a wooden hive, 21 days after having swarmed them into the Berkshire hive? Is September the right month for driving bees out of skeps, in order to take the contents and join the bees to other stocks, and which is the best way to do it? When is the right time to send stocks to the moors? What is glucose, and would you recommend it for feeding, and can I make syrup with brown sugar? What kind of scales would you recommend me to get for weighing my stocks? I cannot get the bees to work in the super. The stock weighs over 30lbs. I enclose a stamp.

A BEE KEEPER OF ALPHINGTON.

Exeter.

REPLY TO No. 47.—It cannot be too strongly impressed on the minds of all bee keepers that the best way to be certain of feeding bees properly, is to do so on all occasions when they cannot get food for themselves. We do not mean by this that they are to be fed every night or during every time of temporary cloudiness or rain, but on every occasion when they have not been able to gather food during some portion of the day, syrup should be given in reasonable quantities during the night ensuing, the quantities varying with the size and strength of the stocks. Your comb in the Woodbury hive ought now to be filled with brood and stores, which evidently is not the case or its weight would be at least four times what it is. Feeding even now is essential, and will stimulate the bees to increased exertion, and giving say half a pint of syrup each evening for a week or two will be a great help to them. The skep which contains the old combs and but few bees, has either lost its young queen, or you took too many bees from it to make your artificial swarm. Drive them out and search among them and see if they have a queen or not. If they have, feed them up to enable them to increase in strength, and you may yet be able to take a good quantity of honey from them in the autumn, when you may also remove one or two combs of honey from each side of your Woodbury, and give them back frames filled with the brood comb taken from the skep, adding the bees to any stock you prefer under precautions which will be given in the August number of Journal. If the bees in the skep are queenless, you may either unite them to the stock next adjoining, or remove them and any other stock to which you may wish to unite them, to some place about a mile and a half away, and unite them there. The best way to do it is to drive all the bees out of both stocks into empty skeps, sprinkle both them and the combs into which they are to be placed with scented syrup, put the bees altogether in one skep, mix them all up, so that they "cannot know themselves from each other," and after the lapse of a quarter of an hour shake them on to the combs of the hive in which they are to remain, and set it carefully in its place. If you have neglected the bees in the Berkshire Hive, you should feed them also for a time to put fresh life into them. The time to send stocks to the moors is when honey is abundant there. You will find glucose described in August number of Journal, and if you read the reply to query respecting it you will find we endorsed the querists experience with it. You can of course make syrup from brown sugar, but as it will contain fermentive properties, it will not be good food for bees to winter on, and when made will be no cheaper than that made with loaf sugar, as it will not absorb so much water. We use a Salter's Spring Balance, and two loops of fine strong cord to pass under the hive. Complaints of the non-success with supers are pretty general this year. As a last resource, try the effect of a piece of brood comb suspended exactly over the central hole, and keep the super as warm as possible. Thanks for the stamp, many forget that as well as the addressed envelope, causing us actual pecuniary loss as well as much waste of valuable time. ED.

(OFFICIAL) DECLARATION.

With a view to prevent the recurrence of wilful arbitrary acts, of arrogance and of treachery, as practised for instance against Messrs. Neighbour, Pettitt, and Abbott, of London, Allensteiner, Guntner, of Germany tricks tending to dishonour the Evangelic religion, and the high German education, it is hereby made known that the bee institution, for years established in Roveredo in the Rezia, has been and is the sole and exclusive property of the undersigned. E. Uhle for his decided knowledge, being only manager, and as such, only partaker in the profits.

To the undersigned only all orders and payments are to be sent in connection with the Institution itself. Any deviation will be considered nil, and will not be attended to.

AVV. FRANCESCO NICOLA,
PROPRIETOR AND GEREFT.

NOTICES TO CORRESPONDENTS AND ENQUIRERS.

J. POSTLETHWAITE.—With respect to the Carr Stewarton Hive, the designer says "the contract price for a large supply is not quite settled, but I expect will be 42s. to 45s. complete, two body boxes, and a honey box with lid and floor-board." When all is arranged it will be duly advertised.

Much valuable correspondence must stand over until next month.

We must beg of those who wish to see their letters and articles inserted, to be careful to write legibly, and on one side of the paper only.

SCALE OF CHARGES FOR ADVERTISEMENTS.
PAYABLE IN ADVANCE.

	£	s.	d.
Two lines of twelve words each	0	1	6
Per line afterwards	0	0	6
,, Inch of Space	0	5	0
,, Quarter column	0	10	6
,, Half ditto, or quarter page	1	0	0
,, Column, or half page	1	15	0
,, Full page	3	3	0

No Advertisements can be received after the 20th of each month.

THE

British Bee Journal,

AND BEE KEEPER'S ADVISER.

CONDUCTED BY CHARLES NASH ABBOTT, BEE-MASTER, HANWELL, W. LONDON.

Guarantees to its Subscribers sound practical replies to all queries on Bee Management, and in urgent cases of difficulty, immediate replies by post or telegraph if desired.

ANNUAL SUBSCRIPTION, HALF-A-GUINEA. Payable in Advance.

Special Terms to Clubs and Literary Institutions. *Free by Post on day of Publication.*

[ENTERED AT STATIONERS' HALL.]

[No. 5. Vol. 1.] SEPTEMBER, 1873. [Published Monthly.]

DIRECTIONS TO CORRESPONDENTS & QUERISTS

1.—Write in a legible hand on one side of the paper only.

2.—Use no abbreviations which are not to appear in print.

3.—Keep every query distinct and separate, and give the fullest possible particulars, stating also the kind of hive used.

4.—When requiring an immediate reply, send a stamped ADDRESSED *envelope, or stamps for cost of telegram.*

The British Bee Journal.

SEPTEMBER, 1873.

NOTWITHSTANDING the "almost unprecedented" yield of honey recorded in the *Times* of Aug. 8 by a "Bee Master" of Tunbridge Wells, we have no hesitation in saying that the honey harvest generally is very far below the usual average of years, and that in many parts of the kingdom it is a total failure. In sheltered locations, with favourable surroundings, it has been possible for bees to store surplus honey, but in the majority of instances, the weather has been most unfavourable for its secretion, and as is usual in such seasons, the bees have devoted their energies to the increase of their numbers, and thus daily consumed the honey as fast as they gathered it.

This, we fear, will have a most discouraging effect upon cottage bee keepers, and others who have hoped to add to their incomes and increase their comforts by the sale of their honey produce, as instead of the expected return, they will be compelled to increase their expenditure in providing [illegible] for their bees during the winter, which [illegible] lose them altogether. Thousands of stocks will [illegible] less perish by the brimstone pit because their owners are too poor to afford the necessary aid, and in these cases we think those who have the interest of such at heart, have a fine field open for the exercise of (profitable) humanity and charity. We feel that a hint on this matter cannot be out of place here, and venture to suggest that in cases where bees are condemned for their poverty alone by those who cannot afford to feed and keep them, the loan of a few pounds of sugar might be advantageously granted, to be repaid in the ensuing spring by a first or second swarm from the hive, so supported and saved from destruction.

The demand for a honey market has elicited a reply in the form of an advertisement, which may be found in our pages, in which the advertiser is willing to purchase *any quantity*; the terms, however, we are not able to give, but shall be glad to afford the means of communication between vendors and the advertiser.

As the season for hive building is approaching, and it is very desirable that the future hive should contain whatever is found advantageous in all other hives, we shall be glad to receive the advice and experience of advanced apiarians on the subject, not necessarily for publication, although we shall be glad to acknowledge every source from which information may be derived to aid us in endeavouring to produce a hive which shall provide all that is considered for the comfort and convenience of the bees under cultivation, and yet be free from the objections [illegible] [illegible] [illegible]

ings and descriptions of every hive now used, not as a means of puffing the articles so described, but that our readers may be made aware of the peculiar advantages they may be said to possess. We shall, therefore be glad to publish engravings of all the parts of every known hive, and the inventors or adaptors own description of the same, and his statement of the advantages it contains. This course will doubtless be the more interesting, as it will elicit inventors' reasons for their improvements on former hives, and will probably lead to a general comparison of ideas on this all-important topic.

We have received from the Rev. W. J. Stracey, of Buxton Vicarage, Norfolk, a copy of the rules of a Bee Club, established by him in 1867, on the principle of a Clothing Club; we have also been favoured by W. Augustus Munn, Esq., of Dover, with a copy of the rules of the British Apiarian Society, bearing date 1811, both of which were established to promote the culture of bees among cottagers, and to which we propose to refer in our next impression.

WHAT TO DO, AND WHEN AND HOW TO DO IT.

We have received numerous enquiries as to when is the best time to feed bees up to the weight necessary to enable them to stand the winter, and in every case we have declined to give any but general directions to do so immediately on the decline of the Autumnal yield of honey. It would be absurd of us to name any particular date, as it is well-known that from the variations of climate and locality, there are a difference of several weeks in the duration of the honey harvest. Many bee keepers are also in doubt whether it is advisable to remove supers as they are filled, or to wait until all are filled prior to removing the already sealed up and finished. We recommend that these latter be immediately removed, so that they be not used for the resort of idle bees, which will only help to discolour the comb and can do no possible good to them; thus concentrating the strength of the hive, on those unfinished. When the honey yield begins to fail it will be observed that the work in partially filled supers is brought to a standstill for a day or two, and presently it will be seen that the bees are gradually removing the honey from the unsealed cells, and are taking it down into the lower or stock hive.

At this point the bee keeper must make up his mind what he will do with his stocks, and accordingly may decide, so will they require differences of treatment. Does he wish to retain his stocks, and yet take all the honey available without injuring them? then let him immediately remove all his supers, and give the bees syrup in small quantities in exchange.

Does he intend to break up his stocks and take all their honey? then let him consider that if he preserves the bees and the brood combs, he will yet possess as much as many hives will contain in January, and that out of such valuable material he may build up one or more stocks such as in spring will repay him handsomely for his trouble and the trifling cost of a little food to enable them to pass the winter safely, and in such cases it will be wiser to do the work immediately and give the bees a chance of fortifying themselves before cold weather sets in.

When stocks are from any cause too weak to winter alone, it will be well to ascertain the cause of their weakness before attempting to deal with them. Such as owe their condition to their poverty-stricken state in the Spring, or from the hives being overcharged with pollen, through having too old a queen or from overswarming, may be safely united after having been gradually brought into close proximity to each other, but should the combs of any of them shew any signs of decayed brood, *i.e.*, brood which has died in the cells after being sealed over, such stocks should not be united under any circumstances as it may be pretty safely inferred that its poor condition is due to the terrible disease known by Apiarians as foul brood, than which there is no disease so detrimental and destructive in an apiary. It is zymotic and highly contagious, the worst feature in it being that the honey in the hive is all charged with the germs of infection, and any robber bee which gets even one load of it, carries home to its hive the poison, which will speedily reduce the colony to the lowest condition of disease and rottenness.

Its effects are not usually observable in unsealed brood, either because the disease does not affect it, or from such as die being carried out by the bees before rottenness ensues, but when sealed, the bees do not seem to arrive at a knowledge of its condition until the dead larvæ become too rotten and filthy for removal. The diseased containing foul brood may be known by their outward appearance. They are flat, and often concave instead of being convex, they become very black, and are often pierced with small holes, which as the disease advances, and the sealing becomes dry, become larger and more ragged. These cells may be found either

isolated or in groups, but in either case the disease will progress, unless strenuous measures be adopted to arrest it.

Of foul brood we shall have more to say on a future occasion, but in the meantime we advise those whose stocks show any symptoms of it, to break them up, placing the bees in empty hives and feeding them for a few days until the honey in their honey sacs is converted or consumed when they may be united to other stocks. The honey in their combs should be boiled, and the hive and brood and store combs burned or buried where they will never see the light again.

Our remarks hitherto have been for the benefit of those who keep bees in straw skeps, but they have some practical value for those more advanced, who use only the bar frame hive, and to the latter we deem it advisable to offer a few words of advice on what is usually called "equalizing stocks."

It cannot be too strongly urged that in equalizing stocks it is much better to unite the weak ones, and feed them up the required standard, than to strengthen them at to the expense of the strong ones, by the interchange of empty combs for those filled with brood and pollen. Stocks to winter well cannot be too strong, and it will be found far wiser and better to remove all the empty combs from several weak hives, and unite the bees and brood combs into one stock, than to jeopardize the whole by weakening the strong ones.

Where feeding is necessary in preparation for the winter, it cannot be too quickly proceeded with when the honey harvest is over and the supers removed.

It must be evident to bee keepers of ordinary capacity, that bees will not naturally discontinue to store honey in the supers if they are able to obtain more than is necessary for their daily wants, and it may be fairly argued that their appropriation of the super honey indicates that the quantity daily gathered from the fields or moors is less than is required to supply the demands of the brood and bees in the body of the hive; therefore the removal by the bee keeper of the supers from which they have been drawing the honey necessary, consequent on the failure of the outdoor supply, must materially check and interfere with its whole internal economy. Often when half-filled supers are thus removed, the hive itself is crowded with brood, and contains little honey except such as may be found in the cells formerly occupied by drone brood. In many parts of England this state of things is brought about before the middle of August, and is it not unwise to withold the supply of food which would keep up the breeding propensity of the queen and bees, until the orthodox feeding month, October, when most of the brood will be hatched out, and the bees will have become comparatively aged before the winter actually arrives? This is really an important matter, and should be well considered, as although such feeding and late breeding may cause the consumption of a little more bee food, the advantage to the colony in possessing a large supply of young bees cannot be over estimated.

It is too frequently the case, when supers are removed, that hives are judged by their weight, and if then sufficiently heavy they are considered fit to stand the winter, and often no more thought or care is bestowed upon them, their owner quite forgetting that the weight may principally consist of brood and pollen, and that the colony may be in danger of starvation. Where the bar frame hive is used, the condition of the bees may be accurately ascertained, and the right course of treatment adopted, but in all cases and in every kind of hive we cannot too forcibly recommend early feeding where feeding is at all necessary. Late feeding is often the cause of that most troublesome of all winter disorders, *dysentery*. Stocks which have yielded good supers of honey, become light through the hatching out of the brood, and when weighed in October, if found to be unfit for wintering, the usual custom them is to give the largest quantity of food in the shortest possible time, and there being plenty of empty cells in the hive, the bees take down from ten to twenty pounds of food in a liquid state in two or three days. and store it in that condition wherever there may be room to put it, and at this point the trouble may be said to begin.

Unfortunately almost all bee books recommend rapid feeding in Autumn, but we think feeding for the winter cannot be too deliberately proceeded with. When supers are removed early, as in the present season, to prevent the bees removing the honey to support their existing brood, we think it a great mistake to fill the hive to repletion with liquid food, as the bees will occupy all the open cells with it, and thus stop the deposition of eggs by the queen than which nothing can be more detrimental to a hive that is intended to stand the winter well. Wintering a hive of old bees does not pay as in the spring, they die so very rapidly, that there are often not enough bees left in it to keep up the heat necessary to enable them to throw off the watery portions of their food, and dysentery suddenly attacks them when they should

be flourishing, and breeding most rapidly, and, as is often said, "after passing the winter well, they come to grief in the spring, with plenty of food in the hive."

If the supers were left on sufficiently long to enable the bees to continue their breeding naturally, they would not be liable to this contingency, and we therefore advise bee keepers not to check them at such a critical period, but to immediately supply the necessary food in reasonable quantities to enable them to act as nature has dictated.

All feeding should be done at night, and cannot be begun too early in the autumn or spring. For immediate use syrup as recommended in the May number of Journal is an excellent food, or that described by our scientific correspondent on page 56 and 57, under the heading "Glucose." For late autumn feeding where, from any cause it becomes necessary, plain barley sugar will be found the best, as it may be put into the hive among the combs, and when stored by the bees will need little or no evaporation, and may be sealed over in the cells at once. It must be remembered that unsealed food is likely to become sour and cause dysentery, therefore there can be no greater folly than to import large quantities of liquid food into a hive, when the weather is too cold to permit the bees to evaporate and seal it over.

Ventilation is also of the greatest importance at this season, but requires care in its adaptation. We recommend that on the removal of the feeding bottle in the morning, an empty super or large flower pot be placed over the perforated zinc on the crown board, so as to give air space above the combs, into which the vitiated gases generated in them may condense without escaping into the outer air, and attracting robbing bees.

Fighting among bees is very catching, and if not quickly stayed, may spread to the whole apiary. One of the quickest methods of stopping the war when confined to two stocks is by the exchange of their situations. This completely nonplusses both of them, and stops the fight at once.

If a general war arises, the safest plan is to stop up all the entrances with perforated zinc, and give as much upward ventilation as possible until the evening, when the hives should each be raised off its floor board to give plenty of air and allow the bees to recover themselves, when during the night the chief aggressors should be sent out of the radius of their foraging flight, until peace is restored when they may be returned to their usual position in the apiary.

Wasps, although reputed enemies of bees, are only sneaking cowardly thieves, they never volunteer an attack, but dodge about unguarded entrances like pilfering rascals, as they are. They may often be seen dissecting dead or dying bees and hence probably arises the notion that they attack them. Ants and earwigs might equally be charged with the same offence. Wasps are really useful to the bee keeper in indicating weak and useless stocks. Those who are annoyed by them should employ the boys of their villages to discover their nests, and the bee keeper should take care to destroy them, to effect which Langstroth recommends that a phial partly filled with turpentine should be placed at each of their entrances.

HIVES.

—o—

Before going farther in our objection to the Woodbury hive we think it would be interesting to notice a very interesting device invented by Mr. A. I. Root, of Medina Ohio, U.S., and patented by him in America on the 18th June, 1872, for fixing all the parts of a bar frame together, without the use of nails or mortices, which, while permitting the lightest possible materials to be used, ensures firmness and rigidity to the frame as a whole. Mr. Root is one of the foremost apiarians in that country, and his writings under the signature "Novice" in the American Bee Journal, have contributed greatly to the advancement of Apicultural knowledge. "Novice's" metal corners are advertised and sold largely in America, at one dollar per hundred, they are of tin, stamped out and moulded by machinery into shapes which at once commend themselves as valuable aids in the manufacture of the bar frame hive, both for their simplicity and utility, as well as from the ease with which they may be used, and the perfect squareness and finish they give to the bar frame when completed.

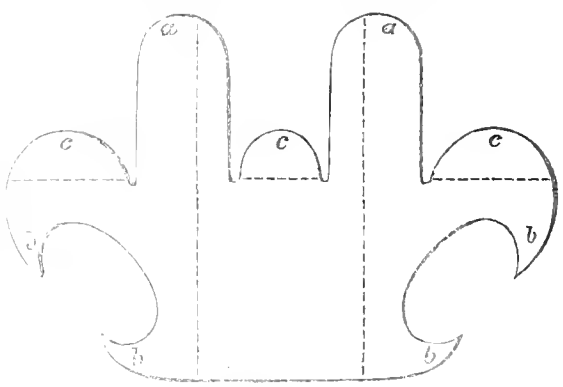


Fig. 1. shews the shape of the piece of metal which furnishes the arms a, a, which rest on the rabbets at back

and front of the hive. The engraving is of the exact size required, and if shaped in cardboard, and cut half through at the dotted lines and each part so cut bent downwards a correct idea may be formed of the upper corners, Fig. 2, which are really unique specimens of clever ingenuity.

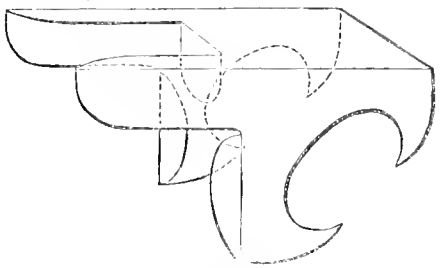


Fig. 2.

In uniting the top bar, and the upright end of the frame, they are mitred together, and fit each other at the angle, as shewn in figure 3, in which it will be seen that the fine points, *b. b. b. b.* are bent round and driven into the wood, thereby holding the parts as with an iron claw.

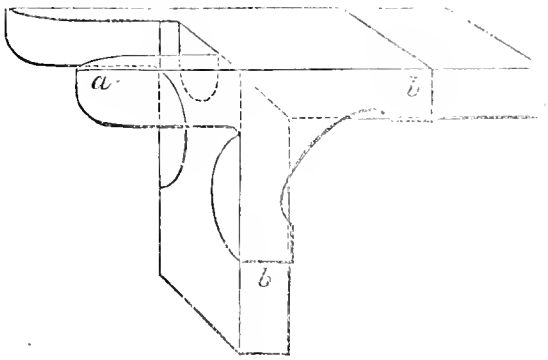


Fig. 3.

Figure 4 shows the exact size and shape of the bottom corner, which, when folded assumes the appearance of figure 5, and in use that of figure 6.

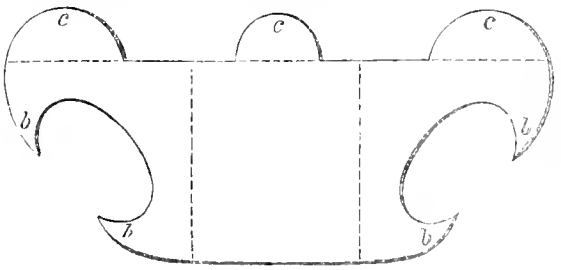


Fig. 4.

One of the chief features of the arrangement, which the patentee claims as a great advantage, is the fact that as only the edges of the projecting ends rest upon the rabbets, the bees cannot fasten them with propolis, or otherwise glue them down as fixtures, and that in manipulation they may be removed from their positions laterally or vertically, without either jarring the hive or comb, or otherwise uselessly disturbing the bees.

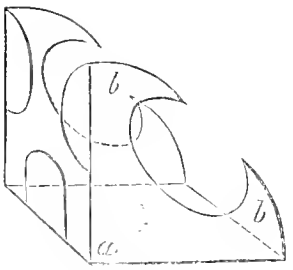


Fig. 5.

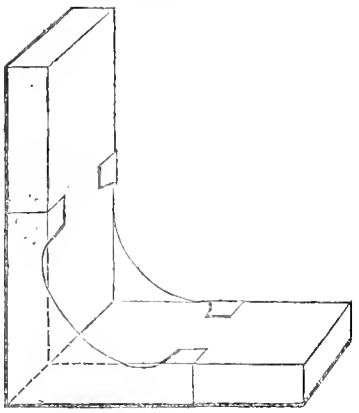
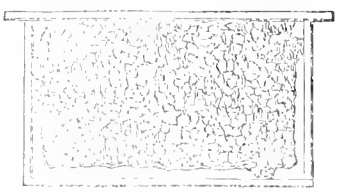


Fig. 6.

Continuing our dissection and criticism of the Woodbury hive, we beg to call attention to the loss of space therein, between the ends of the frames, and the inner front and back walls of the hive. A space of full three eights of an inch is left at either end of each of these frames to enable the bees to pass each other round them, but so averse are the bees to leaving the comb even to pass round the slight strips of wood forming the frames, that they almost invariably leave other spaces inside them, so that it may not be absolutely necessary for them to leave the combs at all.



It will be seen by our engraving, which is an exact representation of a comb from a hive of the kind under discussion that the attachments by which the comb is suspended or supported in the frame are not continuous and the comb itself is often only wrought as near to the sides of the frame, as it would be to the side of the hive if the frame was not there, and from the fact that when pressed for room for storage, &c., the bees crowd the spaces outside the frames with honey comb we are bound to conclude that a great portion of the

space so left outside the frames, is not necessary for the purpose intended. We are confident that three sixteenths of an inch are sufficient for the purpose, but we know also that with the front and back of the hive perpendicular as they now are, the attempting to lift such a comb would cause great danger to the bees from the mangling they would be liable to in being rolled between the ends of the frames and the front and back of the hive. To obviate this danger in *the hive of the future*, the fronts and backs of hives may be made to incline slighly outwards so that immediately on the release of a comb, the space between its ends and the walls of the hive may be increased proportionately as the comb is raised. We find as a rule, that when three sixteenths of an inch of space is left between or around the frames and other parts of a hive, the bees do not attempt to fill it either with propolis or comb, but any space which is too narrow to permit a worker bee to pass, they will endeavour to close on either side with the former, that when the space is greater than that indicated, they often extend their comb into it, or build intermediately against the walls of the hive, in the spaces between and at the ends of the frames, so as to leave only the room they require, to enable them to pass round the frames without actually leaving the dearly loved material on which they prefer to move about.

A valued correspondent at Sevenoaks in Kent, deeply earnest in his endeavours to make the *coming hive* as perfect and as easy of manipulation as possible, has suggested that next to the outer walls at the sides of the hive a thickness of board or other material should be inserted capable of easy removal, so that on its withdrawal the frames in the hive should be immediately capable of movement in a lateral direction.

As he very wisely observes it would only be equivalent to removing one half of the thickness of the side of the hive, and the advantages derived from the combs being immediately set free on a vacancy being so created, would be incalculable.

In the last paragraph on hives in the August number of Journal allusion was made to the way in which *our* metal corners might be made to act as guides to keep the correct distances from each other, but from having received numerous enquiries on that particular point, we think we did not clearly express our meaning. By bending the projecting ends outwards as shewn in outline engraving below, the parts marked *a. b.* may be made to keep the correct distances between the frames, yet as being of thin metal, they will permit the bees to pass all round between those parts there will be no disposition to propolize or stick them down, and the extra width thus given to them will when the cover or honey board is screwed down prevent canting either to the right or left and the sloping shoulder coming against the rabbet, will prevent longitudinal movement.

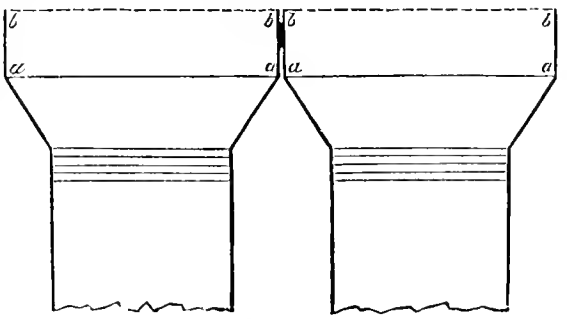


Fig. 7.

This outline exhibits also our idea of what the shape of ths top bar for the frames of *the coming hive*, should be- We would do away with the bottom rack and rail altogether, we would fill up or remove the notched rabbet in the inner front and back of the hive, we would widen the ends of the top bars, so that while they would rest on the back and front of the hives, as at *a. b.* they should by touching each other, preserve their own distance and the steadiness of the combs, we would cover the spaces between with strips of lath, to be held in position by transverse clamps and we would compel the bees to build straight along the bars by greasing the underside of the strips between them, so as to prevent the bees making any attachments thereto.

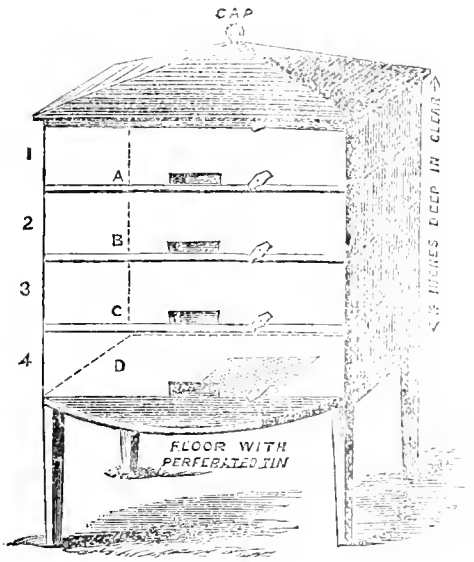
Correspondence.

STEWARTON HIVE AND SYSTEM AND BAR FRAME HIVES.

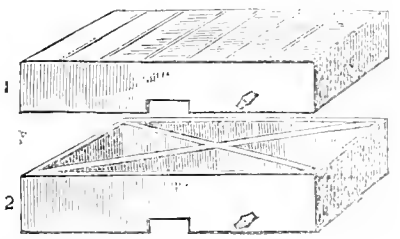
To the Editor of the BRITISH BEE JOURNAL

A Renfrewshire Bee Keeper has in his most able papers in the *British Bee Journal* opened out a famous field of enquiry of the merits of the two plans of Bee Management, viz., Hives opening horizontally in tiers, like the "Stewarton Hive," or Thomas Wildman's suggestions in 1768, in Straw Hives, made and sold afterwards by Daniel Wildman at his shop in Holborn in 1801, or still earlier in wood, introduced

by Gaetano Hirasti, a hive of four open square boxes fastened to each other with nuts or buttons, the depth of each box, 3½ inches in the clear, and about 6 inches in the clear within the square. Wood ¾ of an inch thick.



Inside each should be fixed in the upper part two bars in the form of a cross, with the extremities to the angles (a frame also was introduced of parallel bars for comb building) the entrance 1½ inches for each box, but provided with a stop; so as to close the upper box as it was raised on a division of another quarter box. The stand to have a 4 inch square opening, for a tin slide, perforated, to shut or open to clean, or smoke the hive. The usual directions for driving the bees out of each division with a pan of fire placed beneath the open square perforated tin in the stand are given, and a veil for the face, and worsted gloves for the hands are recommended.



The advantages of the storifying or nadiring hive he states are :—

1st. Capable of enlargement or contraction, according to bee wants and swarms introduced.

2nd. It should open without disturbing the bees, for increasing, or dividing the swarms, or feeding the bees for winter.

3rd. It should be so constructed that the produce may be removed without injury to the bees. (Inter alia, &c.)

4th. It should be internally clean, and smooth and free from flaws.

This Hive, or pile of boxes had no other protection from the weather beyond the projecting roof to keep off the wet. This Hive is convenient for forming artificial swarms. Well stocked hives claim first consideration, rather than the possession of many numbers of hives, and in fact it is observed that when a stock which contained 4,000 bees has given 6 lbs. of honey, one of 8,000 has given 24lbs. It is therefore proper to unite two or more when they happen to be thinly stocked. *Balm* is used to unite bees (a few handfuls scattered within the hives to be united has the effect of making them friends.) To obtain truly formed combs, the foundations should be encouraged on the five bars or parellel sticks at the top, instead of the cross sticks mentioned at the angles. A slanting entrance should be made in the bottom board to assist the bees. The most modern attempt made to introduce this hive in the form of a telescope, or a box drawn out was through the *Cottage Gardener*, but it was not known whether it was the suggestion of the late Mr. Woodbury, of Exeter, or the then editor of that small periodical; but doubtless when Mr. Woodbury's invention or introduction is more fully discussed as the pattern hive of the club and the "Guild of the Bee Masters" is formed, much light will be thrown upon the invention of a System which is totally distinct from the horizontal boxes, as are the sections of the boxes *commended* by Wildman or Madame Vieat; and thus on until Huber's leaves formed the smallest sections joined with hinges, this then forms the other system of hives opening *vertically*.

I think Mr. Editor, when your readers have been informed of the construction of these hives, and the established facts "under a proper system of management" as you very justly remark; a more distinct understanding will be arrived at, that these hives must be classed according to their capabilities of removal from one pasturage to another, as well as the power of thorough inspection of the combs and Queens within &c. not merely as bee experiments, but for practical and certain results: thus far under the "blind system" we know all goes well when in a fair pasturage locality and in a good season with a fixed bee shed, &c. You have given excellent directions at page 9, June,

for "Packing." I think the honey sellers will require instructions how to pack and send the honey to any of the central depots of the Guild, should they establish Bee Centres for the encouragement of cottagers and mechanics in Scotland and Wales, &c. "Novice" seems an enthusiast, but rather severe on my friend as a bee keeper full of success in a "large house or hive without any management."

Does "Novice" know that the successful addition of an American cheese box, as advertised by Mrs. J. W. Pagden produces £70 a year! Why should not the "Pettigrew Hive" produce more under good management; as derived from Adam?

I shall be prepared to prove that quantities of honey may be collected from bees, when left to their own instincts and hives of their own selection, and can the "Renfrewshire Bee Keeper" inform us how the hives of the Stewarton System can be moved from place to place, and how it is done? and how long it would take to pack a hive for the North? I know from the experience of an old Bee Keeper, Mr. T. Addey, that he can send *dozens of Queen bees* and workers through the Post Office, but how can the "Stewarton Hive" be arranged to be swung up in a Railway Carriage to travel one or two hundred miles, or even to Vienna?

The late lamented Mr. Woodbury (or Devonshire Bee Keeper) invented some transportable "Bee House" or mode of sending Live Queen bees and Swarms abroad, the packing cost I believe £5 5s. Can this be done now at a cheaper rate, or is the art lost since his sad and lamented death. Has Mr. G. Neighbour learned the art, and what are his charges for the same purpose?

An answer would oblige, Mr. Editor.

W. AUGUSTUS MUNN.

EXPERIENCE.

DEAR EDITOR,—You doubtless will have wondered how I have succeeded with the Ligurian swarm I had from you at the end of last May, as I presume you feel some interest in the success of all your pupils. But before I proceed allow me sir, to thank you for the kind permission to visit your apiary, the courtesy shewn me while there, together with the information derived from observation, and your kind counsel.

But to return to the Ligurian swarm. Immediately upon my return home, I placed five good combs with plenty of maturing brood in a hive, then shaking the bees on the top of them, they speedily availed themselves with joyful hum of their new home, much more pleased with a furnished house than with an empty one after their journey. After having made an artificial swarm by dividing a strong stock, I exchanged, about the ninth day, the combs given to the Ligurians for those left without a queen in the divided stock, which soon began to raise queens. But not to be tedious, although I have lost several queens during, as I suppose, their wedding tour, I have secured four or five young queens, and shall persevere until I have succeeded in Ligurianising the whole of my stocks. I must defer my judgment for a while as to whether their progeny will turn out hybrids or pure, but two have plenty of Ligurian drones. The Queen I received from you is very prolific, and seems to be changing the colour of my apiary independent of the assistance of her daughters, by means of the brood I have transferred from her for the purpose of raising queens.

Much has been written upon the subject of fumigators. I succeed, by a very simple apparatus, consisting of a piece of thick cane, lit at one end, blowing through the other, the smoke may be directed where you please. At the request of a friend who was about to leave the neighbourhood, and who had arrived at the conviction of the utility of bar frames hives, I transferred a stock a few days since. Having blown in a little of the cane smoke, in a few minutes I turned up the stock, poured in a little syrup, placed another hive over, and drove them with the exception of about twenty bees in less than seven minutes, removed the hive indoors, cut out the comb, and placed it in frames, I use fine wire for fixing the comb in its place, it is easily twisted, and being stiffer than string does not admit of the comb shifting outward so easily, and during all the operations necessary to the completion of the work there did not appear any disposition on the part of the bees to sting.

One of your corresdondents in the June number enquired it there was any maker or vendor from whom he could procure a Honey Slinger. I was having one made at the time, but not having received it and proved it, I did not feel at liberty to speak. But since the commencement of this month, I have received it, and having used it twice, I may say that it works admirably. It was made for me by Mr. Alfred Starling, No. 5, Tottenham Street, Kensal Town, W. It is made large enough for any frames that it is at all probable that I shall use, being capable of containing four frames, sixteen inches long and twelve inches deep at one time, and slings them out clear in a few

minutes. I found as the Americans have done, that there needs care in using new comb if not completely attached to the frame, and in the case of unsealed brood. The most of the unsealed brood was apparently unaffected by the revolution of the comb, but some drone brood not sealed flew out when rapidly revolving. A very little practice will enable the operator to judge at what speed it will be safe to use the brood comb, the sealed comb does not appear to be affected in the least detrimentally. You, Sir, had recommended one of your correspondents to use a piece of galvanised wire netting, for the purpose of securing broken comb in the frames for the bees to mend, and having had the misfortune to have a comb broken out of the frame by falling, before it was placed in the Honey Slinger, I availed myself of your hint, and having secured a piece of netting, by means of fine wire, to a strip of lath, which served the purpose of the top of the frame, for the purpose of slinging out the honey, it answered well, and by means of the additional frame of wire netting, any sized piece of comb, from any kind of hive, may be speedily cleared of the honey without the danger of mixing the farina, and the juices of the brood with the honey, to the detriment of both flavour, and colour, and from the expedition with which a large quantity of honey may be removed from the comb, it would pay for itself in a short time, even to those who do not use the bar frame hive, but have much honey to extract. Besides, other uses might be made of the outside vessel. Mine is made of zinc. I should have said that it is so constructed that although it will admit four frames, sixteen inches long, it will take any length of frame, short of sixteen inches as well. With the experience which once or twice using it will afford, the Honey Slinger is the thing for clearing the comb of the honey, in a pure state, and utilizing the comb again. I noticed that the bees speedily commenced re-filling the combs, when returned to them.

ALPHA.

Winchester.

BEE HOUSES.

SIR,—I see in the July number of the *Bee Journal* in answer to No. 22, that you unhesitatingly condemn Bee Houses or Apiaries.

1st. "Because they harbour vermin."

I have been a bee-keeper for some years, and I am of opinion that the reverse is the case. It stands to reason that single hives, placed about a garden, must be more liable to be plagued with vermin, not only those placed singly and covered over during the winter, but even when there is a single hive, the only occupant of a single house; such I have found to be the case. I have had them singly in a house containing two, four, and six, and I have now built one containing 18 hives, the larger the house the less trouble have I had to keep away or remove the vermin.

2nd. You condemn them "because stocks become acquainted and unite, causing desertion of their hives."

I have had two cases, in both the desertion took place within three days of hiving, in one I found on examination that my gardener had hived a swarm in a very dirty hive, in the other I could not find the cause, and could not either find that they had united with any other, the latter occurred last year, the former this year. As to becoming acquainted I find that in nearly all my hives (some three hundred yards apart) the Ligurian Bee has fraternised with the English Bee, though only having five out of twenty eight Ligurians pure, yet in most of the other hives some of the Alpine are to be found, thus the distance has evidently made no difference to them.

3rd. "Whether the house is a close or open one, you cannot examine the interior (of a hive) without great inconvenience to the operator from the bees or without the risk of disturbing other stocks."

Here, again, I beg to differ from you.

I find I can manipulate them much easier in a large house than in the case of a single hive, either in house or open, (of course the house for a single hive would naturally be small) the bees soon fly away through the open space above, and those returning home during the day do not interfere with the operator. I am speaking more particularly of examining the hives during the working hours of the bee as being best, as the hive is then not crowded.

As to disturbing the other stocks I do not see that that is the case. He must be very clumsy who cannot open one stock without disturbing the one next to it. I should like to see this matter further discussed.

On the whole, I consider the apiary advisable even for those reasons for which you condemn it, and much more for the purpose of ventilation, and as giving the owner more command over the temperature of his hive.

The following is a description of my larger house;—

Brick sides and back; board front; glass top (lights to let up and down); height in front, 7 feet; back, 10 feet; width, 7 feet, and length, 18 feet; two tiers of shelves, 9 hives on each.

I am open to conviction if I am wrong, but at present see no reason to alter my views, if you will kindly ventilate the matter a little further you will oblige.

A KENTISH BEE KEEPER.

In our reply to querist No. 22, we were not guided by any theory, or by the statements of any of the many authors who have denounced bee houses, as apiaries, as strongly as we then did, but our observations were founded on actual experience, and we think it a great pity that any one should court similar loss and disappointment to ours, by going over the same ground again. Our bee house like that of our correspondent was pierced for eighteen hives, but had three shelves, and when stocked, the hives were (like his) about two feet apart. The doors were at the back and the entrances, each with its own internal porch, were situated twelve in front and three at either end, all differently marked by painting or other device, so that the bees should not make a mistake as to appearances; and every ordinary precaution was taken to prevent the evils usually complained of in such cases.

Our precautions, however, were of little or no avail, young queens persisted in making mistakes with fatal results, bees that had lost their queens wandered in search of them into other hives, others returning laden from the fields were blown down or aside, and if unable to take wing again, almost invariably crept into the nearest hive. In opening hives for any purpose the disturbing of others is not always the result of carelessness or clumsiness, as our correspondent broadly hints, but from the almost impossibility of preventing a slight jarring of the shelf on which they are standing.

Unscrewing a cover, prizing up a frame, or wrenching a straw skep from its floor board will often communicate sufficient motion to all the hives on a shelf to cause them to enquire the reason, when the smell of honey will attract them, and may cause a terrible war to rage as occurred with our "Apiary," and which we only stopped by closing all the hives but that attacked, and removing them to distant localities.

This may be a useful hint to a Kentish Bee Keeper in case of accident. Our Bee House is now a receptacle for empty hives and lumber, as which it is harmless. Our allusion to the familiarity which arises amongst stocks in a bee house is of the kind mentioned by Mr. Pettigrew (see below) and not as suggested by our correspondent, whose black queens have evidently mated with Ligurian drones, which will sufficiently account for the presence of marked bees in his black stocks (?) The value of bee houses (as used in England) for winter protection is very doubtful.

Our experience with stocks kept *inside the room of a workman's cottage*, as well as in the house alluded to is not such as would lead us to recommend either plan for general adoption.

We had three hives against the inside wall of the house facing southwards, and they came out but poorly in the spring. They got no sunshine at all, and when the wind blew against their side of the cottage, *i.e.*, from the southward, the way it whistled through the hives made the room anything but comfortable and was most injurious to the bees. The mischief arose from the accumulated pressure of the wind on the side of the house as against a sail, but which unlike it, was immoveable, consequently the rush of air through the hive openings was often most intense, causing the bees to forsake their brood, and seek safely by clustering in the warmest part of the hive. Our allusion to houses for single hives had reference to the Woodbury system, in which every hive is supposed to be sheltered by a cover completely enclosing it, but which of course is moveable, and when the hive is under examination is taken off altogether. Appended are a few extracts from authorities on the subject. ED.

Wildman says on page 96 (published 1770) "Each hive should stand single on a piece of deal, or other wood. This stand should be supported upon a single post. The stands should be four yards asunder, or as far asunder as may be, that the bees of one hive may not interfere with those of another hive, as is sometimes the case when the hives are seated near one another, or on the same stand, for the bees mistaking their own hives alight sometimes at the wrong door, and a fray ensues, in which one or more lose their lives."

The Rev. J. G. Wood, says (page 84) "The hive should always be placed upon a stand of a single log, &c."

Quinby says (page 107) "I have used bee houses, but they will not pay, and I have discarded them, they are objectionable on account of preventing a free circulation of air, &c. He also objects to them because they obstruct the sunshine, &c., and says, "We are often quite prodigal in building a splendid bee house, but we think of economy when we come to put our hives in (it) and are quite sure to pack them too closely. Notwithstanding the objections here urged against bee houses, there will be a few who if they keep bees at all, must have them in a house. * * * * I consider separate stands with spaces between as a better arrangement, than the plank running lengthwise, as the bees cannot run from one hive to another to gossip."

Mr. Pettigrew says (page 66.):—"It appears a work of supererogation to say a word about bee houses in a work on the profitable management of bees. Such houses are very expensive and inconvenient. All bee keepers of experience consider them an hindrance to good management, and objectionable in many senses. We have nothing to say in their favour, save this, that they help to protect hives from the severity of winter storms. Of course there are people who will have bee houses, and have them to please the eye of the most fastidious, real models of beauty and architecture."

"One gentleman in this neighbourhood built one, some four years ago, at a cost of £20. He placed some hives of bees in it; but every year something went wrong with them. We called this season to see

them about swarming time. We found three hives on one bench, containing bees of the most social and neighbourly characters and dispositions we have ever seen, for they marched in and out of each others hives in the most friendly manner, apparently without let or hindrance. This gentleman met the writer about a month ago, when he said, "I have lost all my bees, I can't manage them." No wonder his bees did not prosper. In bee keeping there is no profitable return for foolish and unnecessary expenses. If this gentleman's bees had been kept apart on separate stands, he would have had success instead of loss and disappointment." *Vide.*

THE CARR-STEWARTON HIVE.

SIR,—All the principal advantages of the Stewarton hive are here combined with many of the chief points of excellence to be found in the celebrated hive of Mr. Carr, of Clayton Bridge, Manchester.

The two body boxes can be used separately or together according to the strength of the swarms hived in them.

Each box, 15 inches square outside measure, has about 1,000 cubic inches of inside space, and the nine moveable bars when filled will accommodate about 27,000 worker cells, *i.e.*, 54,000 for the two boxes. The honey box can be used either as a super or nadir.

With this hive, stocks or swarms can be united, and artificial swarms made with the greatest ease.

In summer or in winter every stock in the apiary can be properly aided by telescopic expansion or contraction of space, and every degree of warmth necessary may be maintained.

The writer has several of these Carr-Stewarton hives now in use, and finds them work admirably.

C. W. SMITH.

Totteridge, Herts.

A FACT FOR NATURALISTS.

DEAR SIR,—Shall I be thought excessively sceptical if I bring before you a little matter which came under my own observation, and which seems to throw doubt upon the commonly received opinion that 21 days elapse between the laying of the egg, and the hatching out of the worker bee?

I had a cast on the 15th of last May, but the queen, accompanying it, although of unusual size, never laid an egg, but died on June 3rd.

On the Wednesday, June 5th, a new queen was introduced in a cage.

On the following morning at nine o'clock an examination being made, and the bees appearing friendly she was liberated. On Friday a patch of eggs had been deposited. The following Friday, at 5 p.m. about 50 cells were completely sealed.

This was eight days eight hours from the liberation of the queen. The hive being opened on Thursday, June 25th, a newly hatched bee was seen. After a little search five others were found, two were gnawing out, and one crawled from its cell while under observation. Nineteen days eight hours had elapsed since the queen had been freed.

The weather had been unusually cold, and the colony was very weak, having dwindled much under its moribund sovereign. All things seem against the supposition that the development of the bees had not been retarded to the fullest extent, and yet the time was less than that stated by any apiarian. Does the time vary with different queens? Experiments with fowls' eggs have proved that the period of incubation varies, some hens producing eggs which uniformly hatch on the 20th day, while the progeny of others never chip their way out until the 22nd.

Or, did the eggs which the queen would have laid earlier had she not been caged, continue to mature in her oviduct, so that the hatching followed more quickly upon extrusion in consequence of the queen's abnormal position? Analogies exist which would favour this supposition.

Some whose opportunities for observation are greater than mine, may like to give their experience.

F. CHESHIRE.

Acton, W.

THE STEWARTON HIVE AND SYSTEM.

SIR,—A Renfrewshire Bee Keeper, I think, makes a mistake in supposing that Robert Kerr, of Stewarton, invented the Stewarton hive in 1819, and Major Munn on page 55, is also mistaken in ascribing to Thomas Wildman the invention of the Stewarton hive; as Wildman's first edition was only published in 1768. I have nearly all the works of note that have been published on bees, and find that Moses Rusden, Bee Master to the Kings most excellent Majesty, in his work "A Further Discovery of Bees," published in 1679, (or eighty nine years before Wildman's book was printed) describes the Stewarton Hive, which he then used, and gives drawings of the same as now made, and uses the same argument two hundred

years since, as a Renfrewshire Bee Keeper now does for having the boxes made with eight sides.

On page 81 Rusden says, "The form of my Hive is octagon, or eight square, which being near to roundness, is much better than to have them four square because the bees lying in a globulous body in the centre of the Hive, are thereby the nearer to the circumference in this form as well as in round hives, but in four square hives they would be more remote from the corners, and the consequence would be that the Honey in the corners would candy, and thereby become useless for the Bees in the Spring, which in this form is avoided by their propinquity to it, whose natural heat keeps the Honey from being candied or curdled in the Hive.

The height of the Hive is ten inches from the top to the bottom on the outside, and sixteen inches over from outside to outside with a sliding shutter to run easily in a grove in the middle of the top, backwards over the back window; this shutter is to cover an hole five inches square in the middle of the top of the Hive, also in the hive are two large glass windowes, one before, the other behind, with doors to cover the glasses. And two handles on each side, one for lifting them up; also a frame in the inside, made fast with four pins for the Bees to fasten their combs upon." (This is an exact copy from Rusden's Book and the words as there spelt.) Is not this the first notice we have of a frame placed inside the hive for the bees to fasten their combs upon? One hundred and sixty years before Major Munn, in 1834, put a a bar frame within a case or hive.

Rusden used three of these boxes when working for honey, one on the top of another, exactly the same as the modern Stewarton, and he found then as now, that the bees preferred as is their nature, to always carry their honey the farthest from the entrance into the top box, so Rusden put the empty box underneath the others and removed the top box as soon as it was filled with honey.

This is just the reverse of the Renfrewshire Bee Keeper's management: as on page 54 he says he places the second and third supers on the top, which from my experience I condemn, as the empty bar frame super should always be placed, with one empty comb in the centre for the bees to climb up, immediately over the stock box, as I find if there is not an empty space between the super and the stock box the bees will often swarm. The queen is also tempted to enter the super and spoil all the beautiful white virgin combs by breeding in them, and also when the top super is filled with honey, and an empty super has been placed on it, I have found the bees follow their natural instinct and carry the honey out of the second super into the top one, as soon as the combs were built in which to deposit it.

A "Renfrewshire's" enquiry, page 54, "What would the workers of the manufacturer or store keeper think of being compelled to the additional labour of carrying their respective loads through a projected addition to the premises? no more would our workers relish it." Now this is just Thomas Nutt's exploded idea, when he invented the Collateral system which has been a perfect failure, and I have seen hives that have cost some pounds, broken up for fire wood; Nutt's says in his work, "Humanity to Honey Bees" page 145, "Is it not inhumanity to force the bees to deposit their treasures in a garret, two or three stories high, when a far more convenient store room may be provided for them on the first floor?" and on page 148 he says "For a loaded bee the way through two or three boxes is neither short nor pleasant; it is a labyrinth beset with difficulties and obstructions, in surmounting which much of that time is occupied which would otherwise be more profitably, and we may suppose, far more agreeably employed in passing from flower to flower and in culling their various sweets. Any person, it may be presumed, would rather set down a heavy load on the ground floor than have to tug it up two or three long flights of stairs and through intricate winding passages, and be jostled and impeded and pushed about, and perhaps backwards every now and then, by countless crowds of busy men, unceasingly hurrying up and down and passing and repassing the burdened man in every direction." Now this sort of reasoning sounds very true and nice, but the bees instinct gives the lie to it when applied to them. The bees, even the Ligurians, speak plain English, if people will only listen and look to see what they do. A clever bee master as a Renfrewshire Bee Keeper, knows very well that even in a common straw hive, the bees always carry the honey and deposit it in the cells at the top of the hive, the bottom part of the combs being either filled with brood or are empty. Do not the bees here speak plain enough, that they prefer to carry the honey the farthest from the entrance into the hive? "the garret and through all the difficult ways" to it." And it really is not much loss of time, as it is astonishing how quickly a bee can pass through a crowd of bees into the top super and empty itself, as

anyone can see them in a Unicomb Hive.

There is nothing in a Stewarton Hive that we do not obtain, and a very great deal more in an Improved Bar-frame Hive, which I contend settles that endless disputed question "Which is the best Hive."

WILLIAM CARR,

Newton Heath, near Manchester,
August 11th, 1873.

THE HONEY HARVEST.

——oo——

DEAR SIR,—In spite of "The unprecedented honey harvest" reported in the *Times* of Aug. 8th, by a Bee Master at Tunbridge Wells, which by-the-bye is not so *unprecedented* as he seems to imagine, being far behind my own harvest of last year, I fear that the want of a market for our produce will not be a serious matter to most of us this year, as judging from other reports that have reached me, there will be little or no surplus to be disposed of by the majority of British Bee Keepers. In my own case I have a deficiency to report, and have already commenced to administer the necessary artificial stores required for the coming winter. The hopes that the few fine days from about the 19th to the 24th of July led me to indulge in have been doomed to disappointment, and my Honey Extractor has had an easy time of it. As, however, brighter days, perhaps, are yet in store, let us make use of this time of adversity in preparing for the good time that may be coming. The proposed Bee Guild makes but little head way as yet, although its very great desirability is admitted by all. Now I want to know, Mr. Editor, if we cannot take still another leaf out of the Book of our Cousins, the Yankees, by establishing a British Bee Keepers Association, and holding a meeting in some central place, so that all who have a real desire for advancement, may attend and have a big "Talkee" "Talkee," a convention, in fact where we may freely discuss the past season and its experiences, and try to arrange and provide for the wants and requirements of the coming year. I think more real good can be done in this way and with greater promptitude than in propositions and discussions, that only appear monthly. Bee Keepers should be banded together as one great brotherhood, and I take it, this is the simplest and readiest means to that end. By the time your next number is in print, the bee season of 1873 will be past, and I would lose no time in looking back, but at once start in preparation for the future. My proposition, therefore, may not be inopportune, and if the scheme meets with your approval, I would propose that you fix a time and place for the meeting, and commence to solicit attendance, so that if a convention there be, it may be a comprehensive and successful one. The formation of an association will be the first step towards the establishment of a Guild, as that is just the kind of scheme, if decided to be advisable, that a properly organised association could best carry out. You can put me down as an attendant, hold it where you may, not that I can render any assistance in council, but rather that I may learn wisdom from those whose experience is greater than my own, for desirous as I am for the advancement of Apiculture and willing as I may be to render every assistance in my power, still I am compelled at present to subscribe myself only a

NOVICE.

Queries and Replies.

NOTICE.—*When queries on any subject are nearly synonymous, we only publish that which has required the fullest reply.*

QUERY No. 48.—My bees are clustering about the hive (a straw one) and have been for four or five weeks; the larger number are at the back of the hive, they have made an outlet there themselves, and I cannot get at them very easily. There does not appear to be much work going on. With an occasional exception, the days have been cloudy for some time past. I would have driven them into my bar frame hive, but could not get anyone to help me. That difficulty is gone now, and I am prepared to try my hand at this, to me, new job, but before doing so wish to know *if the tobacco smoke will drive the clustering bees into the hive?* My friends here say it will drive them away. The prejudices of the people here are very strong against this driving; that does not, however, affect me in the slightest degree. I shall certainly try to drive them, hit or miss. My bees were hived in the middle of June, 1872. The cluster of bees at the back of the hive is this moment eighteen inches deep, pear shaped, those at the front are adhering to the front of the hive, not hanging down. A fortnight since the bees brought out many drones, which they killed, also many in the larvæ state.

E. H.

St. Helens.

REPLY TO No. 48.—There is no doubt but that smoke will drive all the outlying bees into the hive if it will hold them, but we think it would be better on a fine day when they are clustering as you say, to remove the stock hive from its stand without disturbing them, and place an empty skep in its stead, then after giving those in the former a little smoke, drive them out and find their queen, as directed in the Journal for July, page 47. Return the bees thus driven to the original hive, which should then be sent a mile or so away, that it may not be further weakened by its bees returning to their old stand, clip the wings of the queen to prevent her flying away with the outlying bees and place her in the empty skep, which has been substituted for the full one, then smoke the outlying bees, and drive them into it. In clipping the queens wings be careful not to clip her feet off, as queens are good contortionists, and often mix feet and wings together, when held by the operator. Of one thing be quite certain, *she will not sting you*, so there is no danger in the operation beyond that to which she is liable.

Your original hive being safely disposed of and the outlying bees driven into the skep on their own stand, nothing remains to be done but to put them into the bar frame hive, directions for which have already been given.

In about 21 days the brood in the old skep will be principally hatched out when the bees contained in it should be driven out, and the combs fixed into the empty frames of your bar frame hive and all the bees united under the usual precautions.

From the fact of your bees killing off their drones and ejecting their drone brood, it is evident they do not mean to swarm. ED.

QUERY No. 46.—Without entering into reasons for so doing, it is my intention to take some of my honey this year by stupefying the bees with chloroform. Will you be kind enough to tell me the exact time in August or September when it will be best to do so. Will you, likewise, tell me if the hive should be prepared to receive the bees again just the same as if for a fresh swarm, and how long they should be fed. I am much afraid this will not be in time to receive an answer in the August publication, but if not, I trust the reply by 1st September will be all-sufficient, and in time for the honey by the beginning of that month.

Yours obediently,
J. S. T.

Dartford, Kent.

REPLY No. 49.—We have of course no right to inquire your reasons for what you propose, but we find some difficulty in recommending as the best, any course which is so much against our principles. It is impossible to give an exact date either in August or September, when the hive will contain most honey, as so much will depend upon the weather and the nature of the locality. For the sake of the bees, and to give them a chance of recovering themselves, and establishing a new home, the sooner they are deprived the better it will be for them, but there will be a greater proportion of brood in the hive, which (as we understand you) will be wasted, than there would be a month hence, On the other hand, a month hence it will be too late, the honey season being over, for the bees to establish themselves so as to be of any actual value in the spring ensuing, as they will be unable to collect the supply of pollen necessary for early breeding.

Hives never require any preparation provided they be perfectly clean and dry, unless it be by the insertion of guide comb.

If you carry out your intention, the bees must be fed until they *i.e.*, the combs and bees, are of a net weight of about 20lbs. We wish we could persuade you to utilize the combs containing the brood and the all-necessary pollen as so often advised in the Journal. A hive may be purchased for a few shillings, quite new, and on depriving two or three stocks. brood comb will be found sufficient to enable the bees to form a first-rate colony. ED.

QUERY No. 50.—I have a strong hive of bees in a straw hive with a flat top, they have sent out a very good swarm about three weeks ago. This parent hive is defective, I want to transfer the bees to a Stewarton Hive. Please tell me how to do it, will they be able to do without any comb being removed?

C. H. F.

Lymington, July 2.

REPLY TO No. 50. -In speaking of "transferring" bees we always understand it to mean the transfer entirely of both combs and bees, the transfer of bees alone is denominated "artificial swarming," and the removal of combs alone "depriving." Will you kindly inform us which you mean, and wherein is your difficulty? Artificial swarming has already been described, so also has transferring.

"Depriving" from straw skeps is not easy, on account of the crowns being fixed and having usually such small holes for feeding only.

Undoubtedly the bees alone would work well in the Stewarton if they have a queen, without a particle of comb being given to them, providing the weather permits them, but it is very easy to give them, the combs out of the old skep, and save them all the trouble and expense of building new ones. If they were able to send out a good swarm three weeks ago, the comb must still be in serviceable condition, and ought not to be wasted. Drive out the bees as described in number for May, see page 7, and on page 8 of June number, into another straw skep, clear the hive with a little chloroform, or puff ball if you prefer it, cut out the combs, and fill the frames of your Stewarton with the worker portions of them, reserving if you chose the honey comb for yourself, then when all is ready place the Stewarton with the slides out on the stand of the old hive, and shake the bees into it, when they will take possession and clear up all waste and rubbish. In two days remove all ligatures, pins or laths used in fastening the combs close up the hive, and the work will be done. ED.

QUERY No. 51.—I have two straw skeps, the bees of which I was wishful should swarm naturally, however, this it seems they won't do, for they have been hanging out in grape-like clusters since early in June, and at the same time have been killing their drones, for I find dozens lying dead constantly. Will it be too late to swarm them artificially? I am very much plagued with robber bees, which I fear might attack them as I fancy, however much I fed them, they would be weak for some time, the weather is and has been very much against them. I have been feeding more or less all summer. Should a glass super be entirely sealed before taking it off? I shall feel much obliged for any information you will kindly give me on those points.

H. M.

Enstone.

REPLY TO No. 51.—It is not too late to make an artificial swarm if you undertake to feed the bees on every occasion when honey cannot be readily obtained by them, *i.e.*, when they could get no honey during the day, they should be fed at night. If so fed (at night) there will be little to attract robbers, and little danger from them during the day.

Glass supers, indeed, all supers to be perfect should have every cell sealed, but should there be any indication that the unfilled and unsealed cells are being emptied of their contents, the super should be removed if the honey is required for present use. If, however, the intention be to keep the super for future use it would be perhaps wiser to allow the bees to carry down all the unsealed honey, which they will speedily do when the out-door supply slackens, but they will not touch the sealed cells until driven to do so by the shortness of the supply within.

Unsealed honey is liable to sour or crystallize. ED.

QUERY No. 52. -In the beginning of summer I bought a stock hive of black bees in a straw skep, which I now find to be much infected with the wax moth; to get rid of which I have had it under consideration to drive all the bees out of the straw skep into either a bar frame or Stewarton hive, thus, as it were, making an artificial swarm, only taking all the bees. On suggesting this to some of my bee keeping friends, they advise me

strongly against it, stating as their reason for so doing that the season is now too far advanced. I am, however, of a different opinion, as the Honey season with us extends into the beginning of September or even a little later, and should the season prove fine they should collect as much from the heather (distant about a mile) as should keep them through the winter, but if not they could be fed. Having now stated the case I will be glad to have your advice, whether I should drive the bees or not, and if so whether it should be into a bar comb or Stewarton Hive; if the former, would it be advisable to fix as much of the brood comb in the frames as possible, or would it be better to keep out all comb, in case it should contain any of the wax moth or its eggs? Shall feel obliged if you will kindly reply to the foregoing by letter, for which I enclose stamped addressed envelope. I would not have troubled you to do so, but if you advise the bees to be driven, the sooner it is now done the better. Wishing you all manner of success, &c.

J. W.

Gourock, July 26

REPLY TO No. 52.—If you place the bees alone in a new hive now they will act as a natural swarm, and will build comb as long as they can get honey and pollen. If you place such of their combs with them as are available, they may build comb: but the major part of it will be store or drone comb in which to deposit the honey which is now so abundant. In the first case you will lose both the brood and comb already existing, and in the second the stock may have such a superabundance of drone comb as will make it comparatively useless in future.

If the stock be strong enough, we recommend you to make an artificial swarm, and place it in one compartment of a Stewarton set, so that the bees may build naturally in it, leaving only sufficient bees to hatch out the brood already existing in the old straw skep. In twenty-one days the combs in the skep will be free of brood when the bees in the latter should be driven out and all the available parts of the combs cut out and fixed into the second compartment of the Stewarton hive, to which the driven bees should then be added. When nicely fixed and all are comfortable the latter should be placed under the former, with the usual precautions on uniting, so that together they may form a good stock.

If any further information be desired we shall be happy to render it, but we think you will see the value of the hint here given. ED.

QUERY No. 53.—By what distinctive marks in the progeny of my young queens am I to determine whether they have mated with Ligurian drones of which I have plenty, or with black drone? Are not one banded worker bees, and very dark queen progeny an evidence either that the queen mother is not pure having some strain of the black blood, or that she has mated with a black drone? The answer to the above questions will give me confidence in speaking of the bees I may rear from my imported queen.

D. W. P.

Fulford, Winchester.

REPLY TO No. 53.—We always consider that the progeny of young queens are pure, when there are no all-black bees among them.

You may get bees as you may queens, with differences in their distinctive marks, but if a queen has mated with a black drone or with a drone, the progeny of a queen whose mother had so mated, there would surely be some black bees, and this would determine their impurity. There are as many degrees of beauty in Ligurians as there are of colour in English bees, and we are always satisfied if all the bees are alike. The queens own queen progeny will sometimes vary much in colour, one being nearly all black and another nearly all yellow, yet both may be equally pure. Much depends on one's aim and object; if it be the obtaining of beautiful bees, that is one thing, but if the improvement of the bees as workers be the desideratum there is little doubt but that one is as good as the other. ED.

QUERY No. 54.—Will you kindly give me answers to the following queries? (1). One of my bar and frame hives I perceive has from some fault in the stand or from twisting in the frames got some frames jammed close together. The bees (a swarm) have by this time, probably fastened them together in a mass. How am I to correct this, and how to prevent frames hanging at unequal distances apart? My frames are in notches at the top. (2). What breadth of bar is best, and what distance from centre of bar to centre of the next; and interval between each bar is advisable? (3). Cottagers here would give me comb containing brood from their earliest takings (chiefly "casts") when they murder their bees: could I profit by their wilful ignorance, and transfer brood to a frame hive, or are these later brood chiefly drone, as was in my own apiary last year.

LEARNER.

Leominster.

REPLY TO No. 54.—A bar frame hive should have a lath sprung in across the top of the frames, to prevent their being shaken out of the notches at top, otherwise when hiving by turning the hive bottom upwards, (as many will insist on doing) to receive the swarm, the frames get out of place, and the whole arrangement is nullified.

This we suspect is your case, as otherwise we do not see how the frames could get displaced.

We do not recommend you to undertake to rectify the combs this year, as being new and tender and filled with brood and provision, they will not bear their own weight if detached from the bars above, unless carefully supported all round, and as in doing this much brood and comb would be injured, we think it will be wiser to wait for another year, when the combs will be tougher.

Why not place the whole bodily on the top of another hive, after the manner of the Stewarton system? you would then get your crooked comb filled with honey and only very slightly discoloured, and probably other supers on that, as described by a Renfrewshire Bee Keeper.

The notches if properly cut, ought to maintain the correct distances between the frames at top, and it is usual to have corresponding notches in a rack at bottom, so as to ensure their perpendicularity, but your hives seem to be without such racks.

Many plans are resorted to, to ensure the object you name, but none seem effectual or satisfactory.

If you insist on rectifying the combs now, the first thing to do will be to get them out, and this you had better do bodily. Take two pieces of iron rod, each of slightly less length than the width of the hive, bore holes at right and left top corners of one side of hive, to permit the iron rods being passed under the ends of the frames between them and the front and back of hive, so that all the frames with their contents may be lifted out of the hive *en masse* and set down in front of it. The comb must then be cut out of such frames as it is improperly attached to, but in case where it is fairly within a frame, it would be well to leave it attached to the top bar and by bending it,

bring it within the frame so as to enable the bees to further attach it to the top as in transferring, which is described in Journal No. 2. In cases where a small quantity only of new worker comb has accidentally fallen, we have spliced it into old frames of combs from other hives, removing the parts which contain only drone cells, to enable us to do so, and perhaps the hint might be useful now.

The bars may be about ¾ or ⅞ of an inch in width, and should be from $1\frac{7}{16}$ inches to 1½ inches from centre to centre of each other, the space between each, being of course governed by the width of the bars.

The combs available from cottagers may be built up into nice stocks of bees as suggested in Journal under the heading "Transferring."

It is not at all usual for "casts" to build much drone comb, and its presence late in Autumn, filled with brood, indicates the presence of an unfertile queen or a fertile worker. Ed.

Query No. 55.—If you have a swarm hived and a day or two afterwards take another swarm and want to join them to the former, do you after you have shaken them on to a cloth pick out the queen or allow them all to ascend and leave them to fight it out as to who shall be queen? I have had much trouble with a swarm, and can disprove the statement that bees do not know their original hive when moved to a fresh stool. A swarm issued a week ago, and before settling, returned to the hive, making a great commotion. I picked up the queen from the ground, and kept her 15 or 20 minutes walking on my hands, and showed her to a lot of friends. I returned her, and the next day, when I was away, they swarmed again, but again returned. The day before yesterday they swarmed and settled very kindly. I put them into a new Neighbour's Hive, moved the old hive six stools down, and put an empty hive on the old stool in case they came back. They began to settle and go up into "Neighbour's" hive, when suddenly they changed their mind, and began to return many to the old hive, which was removed as before mentioned, then a singular thing took place, the next hive to the original one was covered with bees, and something like a good sized swarm began to hang under the board, increasing in size until it became a good swarm I immediately moved that hive and swept them into "Neighbours" again, placing it on the stool, and in about three hours they were all up in a bunch, but I do not know whether they have a queen. They are still in a big bunch, and seem to be secreting wax, and they are working very hard in their new situation. How long ought they to bunch? many, I ought to have said are rushing about and clearing the hive. Will you give me your opinion as to whether you think the queen will be with them? Would they not have forsaken by this time, and not started carrying pollen, &c., if the queen was lost?

J. T.

Hereford.

Reply to No. 55.—In doubling swarms it is usual to allow the queens to fight for the supremacy on the ground that the strongest will conquer, but we prefer to remove the one we consider the least valuable.

A queen may be so distended with eggs (as would probably be the case with that hived first) as to be incapable of defending herself against one more lithe and active, and though the most valuable, might fall the victim.

In your second case all your trouble has been brought on by removing the old stock from its stand.

Bees that have swarmed naturally and are accompanied by their queen, seem to forget their old quarters altogether, and have no desire to return to them even when set close to them.

Removing the old stock and putting an empty skep in its place could serve no useful purpose, as all straggling bees would be sure to return to the old stand, and from the fact of the bulk of them returning and attempting to unite with the stock next to it we think they must have lost their queen.

In the "Neighbour's," hive you now have the swarm itself, and all the working population of the stock they endeavoured to amalgamate with, but which you removed, leaving them in our opinion, queenless and isolated. What were they to do? Under such circumstances it was not singular that some of them found out their own hive again, and went to it as the only place where they could gain admittance. The pollen gatherers are probably workers from the hive last removed, which having gone out without having marked the new locality, have returned to the old one. The rushing about also indicates the absence of the queen. When you caught her if you had removed the old stock and placed an empty skep in its stead, and put the queen into it, the returning bees would have formed the swarm, and all might have been well.

The best thing you can now do is to form an artificial swarm from one of your other stocks by driving out all the bees and then place the hive full of combs in place of the "Neighbour's" hive, now occupied by the erratic swarm. This will prevent loss and disappointment, as you will still possess the one swarm, and run comparatively no risk of losing the other through its queenlessness. Ed.

NOTICES TO CORRESPONDENTS AND ENQUIRERS.

J.W.B., Hereford. Second-hand hives are useful as patterns, but we should be very sorry to place bees in one unless we had either boiled or baked it to ensure the destruction of vermin and the germs of all disease.

G. Keats. We know there is a description of a bee trap in *Bee Keeping for the Many*, published at the office of the *Journal of Horticulture*, but we cannot think we acted unfairly in noticing that advertised by Mr. Aston. The former leaves bee keepers to manufacture for themselves, the latter is ready-made and ready to hand.

N.B.—Our remarks on the use of drones are deferred until a future number.

We are sorry to be compelled to defer the insertion of several interesting communications until next month's issue.

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THE

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[No. 6. Vol. 1.] OCTOBER, 1873. [Published Monthly.]

DIRECTIONS TO CORRESPONDENTS & QUERISTS

1.—Write in a legible hand on one side of the paper only.

2.—Use no abbreviations which are not to appear in print.

3.—Keep every query distinct and separate, and give the fullest possible particulars, stating also the kind of hive used.

4.—When requiring an immediate reply, send a stamped ADDRESSED *envelope, or stamps for cost of telegram.*

The British Bee Journal.

OCTOBER, 1873.

The Exhibition of bees, honey, and bee furniture at the Great International Horticultural Show at Manchester, appears to have been a great success, and afforded some curious illustrations of Mrs. Tuppers trite saying, that "bees do nothing invariably!"

Without implying the slightest doubt of the genuineness of the honey, &c., exhibited, we think the exhibition too remarkable to be allowed to pass unnoticed. The past season is generally admitted to have been the very worst for bee keepers which has been experienced in England during the last twelve years, and complaints, both loud and deep from Manchester and its neighbourhood go far to shew that that locality has not been in any degree favoured, yet we find a native super exhibited there of the weight of 87 lbs. of pure virgin honey.

We make no objection whatever to the fact, but if one such super was possible, why were not twenty? Naturally the first prize was given to such a splendid object, but the second prize fell (Oh, what a fall!") to a super of twenty five pounds only.

Again a hive was exhibited (not in competition), which weighed with its supers, 136 lbs. net, the same being the product of a swarm of the present year, yet the best hive exhibited (of the same class) weighed 82 lbs. only, the second prize falling to a hive of 60 lbs.

Another curious feature was here exhibited in the fact that the best filled supers were of glass, all those of straw or wood being incomplete, yet a general impression exists that bees dislike glass, and prefer supers of the other materials.

We do not make these observations in any captious spirit, but to direct attention to the irregularities and uncertainties attendant on bee keeping, one stock will collect a hundred pounds of honey, while others in the same apiary require to be fed to enable them to live. We do not understand such phenomena.

The proposed Bee Guild still stands over, waiting for a volunteer leader to form a rallying point. We are assured that only for this are we haltting, and we hope that during the ensuing winter months, some enterprising bee master will come to the front and raise his colours.

It has been suggested to us that a public meeting of bee keepers should be held at the Crystal Palace during the coming winter months when bees are quiet. We think it not unlikely that such a meeting, followed or preceded by the *sine qua non*, a good dinner, would bring about the object so much desired and needed. We shall be glad to receive the names of bee keepers willing to take part in such a movement, and hope they will assist us with their advice on the subject, so as to enable us to take further steps in thus promoting the formation of the brotherhood.

We are sincerely grateful for the valuable hints we have received from our numerous friends and supporters in our endeavours to improve the hive, and shall be glad of their continued criticism and help in so important a matter.

WHAT TO DO, AND WHEN AND HOW TO DO IT.

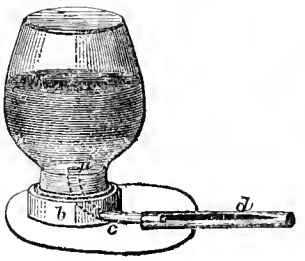
—o—

Many bee keeping correspondents complain that as many of their bees have not built their combs down to the bottoms of their hives, their attempts to drive them for union with other stocks are futile, for that when they reverse their hives to drum them up into empty skeps, they congregate in the otherwise unoccupied spaces in their own hives, and refuse to ascend further. These cases are the more disagreeable, as from their being swarms of this year, the combs are to tender too permit of the jerking process, by which the bees might otherwise be shaken from the hives, as in all probability the comb and bees would all be jerked out together. In such cases we would remind bee keepers that second hand skeps from being dangerous (as a rule) for the habitation of future swarms, and consequently comparatively valueless, the best course to pursue would be to cut the skep away until the combs are at least level with its sides when the bees may be easily driven; but it must be borne in mind that bees will not to willingly leave their combs unless they are first enabled to fill themselves with honey or other sweets, and that as at this time of year there are few open honey cells in their hives, the exodus will be expedited by giving to the combs and bees a liberal sprinkling of syrup, made of sugar and water, about the warmth of new milk.

It often happens that straw skeps are without the all-important feeding holes in their crowns, and that consequently feeding by the best, cheapest, and most cleanly of all modes, the bottle, as represented in the number for May, is impossible. Many would say, why not cut a hole? but to this we reply that when the combs are young and tender, the attempt to do so may cause the whole to fall into the body of the hive, as happened in our own apiary only a short time since. To remedy this state of things, and to enable us to continue the use of our favourite bottle, we adopted the apparatus which is exhibited in our engraving, and which acts to our complete satisfaction.

Through the cork, *a*, is inserted a piece of bent tubing, such as is used for the conveyance of gas in dwellings, slightly enlarged at the end within the bottle, to prevent leakage, the other end is passed into a second piece of tubing, just large enough to receive it, and is sealed to it either by soldering or otherwise.

This second piece of tubing is split along its upper side to form a trough, *d*, which is pinched at its end to prevent the food to be given from running out of it. The cork which fits the bottle is then nailed to a block of wood, *b*, and to the bottom of the latter is nailed a piece of tin or zinc, *c*, which may be slid under the hive to prevent the accidental falling of the bottle.



When the bottle is filled with syrup, the cork should be pressed in and the whole inverted, when the syrup will flow into the trough, until level with the top of the small tube, and will continue to do so as long as the supply in the bottle lasts.

The portion of the tube which is open, as a trough, is intended to be placed within the hive, either by passing it through the entrance between the combs, or by cutting a notch in the back of the hive close to the floor board and inserting it by that means. We are, however, in favour of passing it through the entrance, as doing so effects the partial closing of the opening, and renders liability to robbing more remote.

The piece of tin or zinc may be fixed to the block by a central screw, and if perforated and applied to hives with sunk entrances, by making it cover the whole of the channel in the floor board, the bees can be fed in confinement with safety, and robbing will be absolutely prevented.

This latter mode, however, as it entails the necessity of cutting a new hole to admit the tube, is *not* recommended, and as a rule it will be found much better and safer to feed always about dusk, and to remove any syrup remaining in the bottles as early in the morning as possible.

Little will remain undone that is necessary to the well-being of the bees during the approaching winter, if our suggestions hitherto have been attended to, unless it be the all-important scavenging, which is so essential to the well-being of every apiary.

Every hive should be thoroughly examined and cleared of the larvæ and chrysalides of that most destructive of all enemies, the wax moth.

In the same indictment may be included wasps and spiders, and although they cannot be charged on so many counts as the former, still they are intolerable pests, and a careful destruction of their nests and a thorough routing, will save an immense amount of labour in the future. Queen wasps, about which so many directions are given for their destruction in the spring, may, like spiders and wax moths, be now destroyed wholesale. A stitch in time will not only save nine, but will prevent the necessity for nine hundred, or more.

HIVES.

—o—

Langstroth in his work, "The Hive and Honey Bee," pages 95 to 108 inclusive, devotes a whole chapter to what he considers the requisites of a complete hive, and gives a list of sixty-one essentials to perfect his idea. We, however, think the whole matter may be summed up in one general remark, that a per-

fect hive should be capable of being accommodated to the requirements of every sized swarm or cast, should give the apiarian complete control over every comb, which should be readily interchangeable with every other hive, perfect command over the bees in every part of the hive, should afford facilities for the multiplication and protection of the bees, and for the accumulation and removal of honey, should itself be perfectly accessible in all its parts without maiming or causing the necessary destruction of any of the bees within it, and while being proof against the vicissitudes of climate should be easy of ventilation, and capable of adjustment for removal at the shortest possible notice. Hives, as at present constructed fulfil these conditions in a limited degree only, and every attempt to improve their manufacture without increasing their cost, deserves the careful attention of all bee keepers. Many persons dread the use of the bar frame hive, because they fear they shall not be able to *manage* their bees in them, forgetting that while bees do well, there need be no interference with them, and ignoring their value when a time of difficulty and uncertainty supervenes, when, while in straw skeps the causes of the difficulty as a rule, can only be guessed at, on the other hand, with the bar frame hive the true state of the case may be immediately ascertained, and the causes of difficulty removed.

The chief value of the bar frame hive lies in the fact of its bar frames rendering the combs moveable at pleasure, and whatever may be the size, shape, or material of the hive, that will be found most easy of manipulation and best fitted to the wants of the bees whose bar frames have been made and fitted with the greatest care and attention. In former numbers we have argued against the errors which our experience has shewn us to exist more or less in almost all hives hitherto made, and while far from wishing to condemn them to disuse, we hope to shew a simple means by which in future they may be corrected or avoided. The chief difficulty has hitherto been the want of a simple means by which the frames may be rigidly kept in their proper places, which has hitherto been done by the aid of the notched rabbet and bottom rack as in the Woodbury hive, or by screwing each frame down to its proper position as in the Stewarton hive so ably described by "A Renfrewshire Bee Keeper" in the earlier numbers of this Journal. Each of these systems, however, has its disadvantages, for in the former while the notched rabbets and bottom rack cause great loss of space in the hive, and much inconvenience in manipulation with the frames as mentioned on page 51, &c., the latter is open to objection on account of the loss of time necessarily incurred in withdrawing the screws and replacing them.

We therefore propose to simplify the top bars of bar frames so that they shall, when in contact with each other in the hive, maintain their own respective positions, and ensure to each other more perfect rigidity when fixed for transport than has ever been obtained by any other equally simple means.

New hives, as hinted in former pages, we would make slightly larger at the top than at the bottom, especially in the direction from front to rear, and this we feel sure can easily be done without detriment to the outward appearance of the hive, or in any way interfering with the perpendicularity and squareness so essential where the storefying system is adopted.

In the first place, in ordering the timber for the manufacture of the hives, it will be necessary to determine the depth which the hives shall be when made; a matter well worthy of consideration, as it has many bearings, not the least of which is its influence on the cost of the materials. It is singular that so much disputation should take place respecting the depth of hives, when it is so notorious that all shallow hives are useless unless storified. The main feature in a hive is its capability of adaptation to the wants of the bees, and whether a hive from nine to twelve inches deep to which space may be gradually added laterally at the rate of one frame at a time, according to the breeding power of the queen, and to which a super or series of supers may be added, has any merit or advantage over a hive on the Stewarton plan, which admits of increase of space by boxes only, each builder must for himself determine.

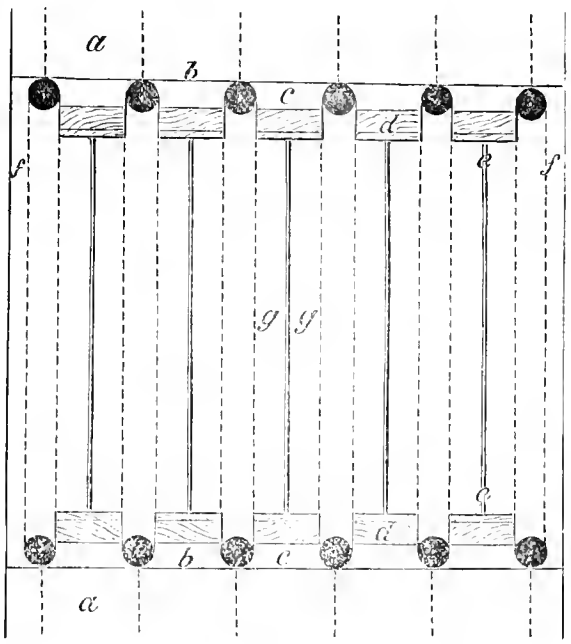
It may be safely concluded that the shape and make of a hive does not in any way govern the honey results of the season, except in so far as it may offer facilities for easy management and adaptation to the requirements of the bees, as is proved by the variety of hives now in use, each of which is occasionally found superior to every other. We, therefore, advise intending hive-builders not to be governed so much by hives at present in existence, as by the facilities which their particular districts offer to enable them to procure the necessary material at the cheapest rate. Those who will allow themselves to be influenced by our opinion in this most important matter will at once determine on the depth of the hive they intend to adopt, and having so determined, we strongly recommend them, unless inclined to try experiments, to have only one kind of hive in their apiaries.

Where it is found desirable to build hives of wood throughout, we think the hive builder would be wise if he caused his material to be sawn of exactly the thickness he will require it, and having in view the suggestion that the coming hive should be wider at the top than at the bottom, it may not be out of place to point out an easy mode of effecting that object.

Hives that are intended to stand with no outer protection except such as may be afforded by an overhanging roof, or the shade of trees, must necessarily be made of thicker material than those which are to have an outer casing, and we think in the first instance that the former is the kind of hive we had better now describe. We propose to make the walls of the hive of feather edge boards, an inch and a half thick at bottom, and an inch and an eighth thick at the top, the outsides to be kept perfectly square, so that the diminished thickness of the upper edges of the sides shall make the top of the hive inside at least three quarters of an inch larger both ways than the bottom of it will be. There shall be no rabbets or notched racks either in the top or bottom of the hive, but the frames shall be suspended in the hive by their projecting ends, which shall rest fairly upon the front and back of the hive, and maintain their own position parallel with the outside perpendicular of its walls, the insides of which it will be seen will be each three eighths of an inch out of upright. These dimensions,

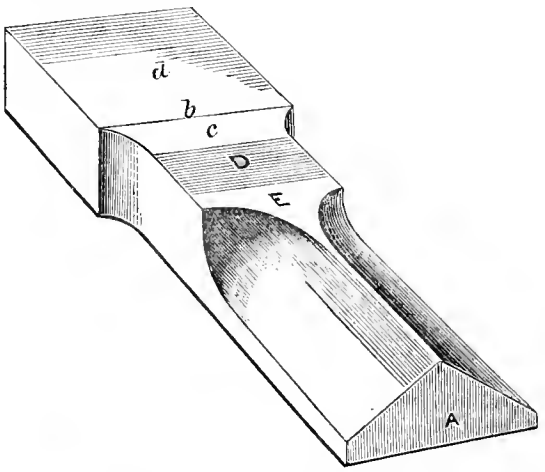
as regards the taper of the walls, are intended for hives from nine to twelve inches in height, but it will be evident that in hives of a shallower description they will not need so much difference in their thicknesses. The floor board, as recommended by Langstroth, should be fixed to the hive, "for convenience in moving it, and to prevent the depredations of moths and worms," as, however, many prefer to have moveable detached floor boards, we think that instead of making them with clamps across their under sides they should be clamped along the ends of the boards of which they are formed, and that sunk entrances should be cut out of both sides of them to make them reversible. Where the hive builder is not a skilled carpenter, the bottom board may be formed of boards fairly jointed, and fixed at their ends by stout iron hooping well nailed on, which will prevent both warping and shrinking.

The chief improvement proposed, however, is in the formation of the bar frame, if it may be so called, consisting as it will of a top bar, and two ends only. To make them, a half-inch board will be required, of the same size as the top of the hive outside, or if it be preferred that the frames should project as in the "Pettitt" hive, it will of course be required longer than the hive is, in the direction in which the frames are to run. The board should be lined out, as shown in engraving, care being taken to make the dimensions perfectly accurate.

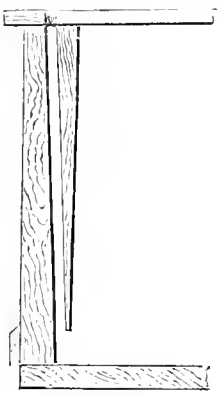


a.a. represent the ends of the frames which rest upon the back and front walls of the hive, which will be, when finished, one and nine-twentieth inches wide, and of any length desirable to give hand hold on the outside of the hive; *b.b.* show the exact distance between the front and back walls of the hive inside at the top; *c.c.* indicate the distances between the inside walls of the hive and the outsides of the ends of the frames, which should not be more than a quarter of an inch nor less than three-sixteenths; *d.d.* show the positions in which the ends of the frames are to be fixed, which said ends will be one inch wide, and half an inch thick at the top, but will diminish to one eighth of an inch at their bottom ends, and may also be made proportionately narrow there; *e.e.* is the central line down the frame to indicate the guide for the bees to work to. In forming these guides the edges of the frames must be chamfered away, so as to leave the under side of the frame exactly as is indicated in engraving No. 2, where the under side of the top bar is shown uppermost, the guide line of which should be properly coated with wax.

f.f. are the two outside pieces, which will rest upon the side walls of the hive, and which, when fixed, will prevent all lateral movement of the frames; *g.g.* are the outer edges of the top bar which should be an inch in width.



The board having been lined out, as shown, holes should be bored with a half-inch centre bit at each of the black dots, so that they will come within the hive, that when the frames are separated, as they should be by cutting along all the dotted lines, they may form the shoulders of them, as exhibited in figure 2 on either side of *c*, which represents the end of a top bar of exact size and pattern, the letters and lines on which have otherwise the same significance as those on figure 1.



The end pieces of the frames will be tapering, but the taper will be all on the outside of each of them, so that they shall be parallel with the inside back and front of the hive, and yet leave them perfectly perpendicular. This arrangement will secure easy room for the frames as they are being lifted out of the hive, yet will not cause any strain upon the end pieces or create any tendency in them to thrust themselves outwards against the hive.

THE MANCHESTER BEE AND HONEY SHOW.

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The exhibition of bees and bee produce at the Manchester International Horticultural Exhibition, which took place on the 3, 4, 5, and 6 of September last was most successful. The most wonderful thing in the whole exhibition was the glass super exhibited by Mr. Breen, of Arwick, Manchester, which was of the enormous weight of 87 pounds. Considering that the present year has been the worst known for honey gathering for many years, and bearing in mind that no other super was exhibited of a greater weight than 40 pounds, (not in competition) we think it most surprising, and so thought one of the judges, the Rev. W. C. Cotton, who gave £10 for it on the spot. The second prize for supers fell to Mr. Bethel, whose glass super weighed 25 pounds. It is somewhat curious, considering the outcry that has been raised against glass supers, that they should here be the only supers worthy of notice. None of the wooden or straw supers were filled, but for the best Mr. Withnell, of Burton-on-Trent, gained the first prize, and Mr. Lee, of Windlesham, the second. Mr. Lee also took the first prize, a silver medal, for his collection of bar frame hives, and Mr. Yates, of Manchester, carried off the second prize, a bronze medal. An extra prize was awarded to Mr. Wood, for his exhibition of bee goods from Denmark, and Mr. Aston, of Newport, Salop, received a second ditto for his excellent bee and drone traps.

For the heaviest and best hive filled by a swarm of this year, Mr. Breen took the first prize for a net weight of 82 pounds in a Pettigrew hive, beating Mr. Withnell, who exhibited a bar frame hive of 60 pounds weight. For ornamental hives with the bees in them, Mr. Cook, of Denton, took first prize with a splendid hive of choice Ligurians, Mr. Wrigley, of Rochdale, came second, and for the best Unicomb hive with it, Mr. Young, of Burton, was the most fortunate exhibitor.

Mr. Pettigrew, from whom much was expected, did not compete. He had hoped to be enabled to exhibit a large number of heavy supers, but was doomed to disappointment. He had, however, one hive on view, and also a glass super, both filled by a swarm of this year, total net weight, 139 pounds; he also exhibited a second glass super of 40 pounds weight as above stated. Taken altogether, this exhibition must be considered most successful and instructive, successful because of the intense interest it created among the crowds, who continuously flocked to witness it, and instructive as shewing how, in a season which is considered even in the neighbourhood of Manchester to have been the very worst that has been experienced for 12 years, certain stocks and swarms have, from some peculiar reason or treatment, been enabled to shew results which even in a good season, would be extra-ordinary.

THE CARR-STEWARTON HIVE.

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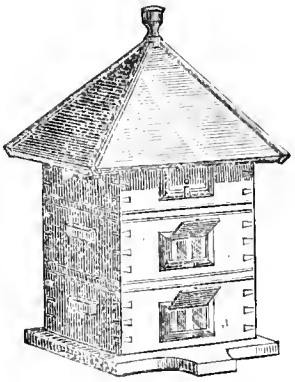
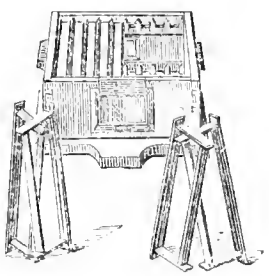
The Carr-Stewarton hive was originated to combine all the chief points of excellence to be found in the bar frame principle as exemplified in the excellent hive of Mr. Carr, of Newton Heath, Manchester, with the great advantage of the Stewarton Hive and System, as enunciated by a Renfrewshire Bee Keeper.



In its manufacture the squareness and finish of Mr. Carr's hive have been preserved, and his mode of securing the frames without the odious rack across the bottom of the hive has been adopted, but to secure the storifying system, the body boxes and supers are made of the same depth as those forming the celebrated Stewarton hive. The body boxes, which may each be used as a separate hive, are 15 inches square outside and six inches deep, they have nine frames each, the the inside dimensions of which are 12⅝ inches at the top, 12⅛ at the bottom, and 4⅞ deep, thus being slightly wedge shaped and giving additional security to the combs in transferring, as should they give way in the slightest degree they become only the more tightly secured. The honey box, which may be used either as a super or a nadir, has the same superficial area as the body boxes but is four inches deep only, and fitted with seven bars of increased width to ensure the building of thicker combs of honey. It is intended when in use to stand on the lid of the hive, which is of straw worked in a wooden frame with slits to admit the workers and exclude the queen and drones. The hive is well made, is furnished with windows at back and front, and buttons to keep the sections steady in their places. The engravings are from photographs and consequently give an accurate idea of all its parts, and its general appearance as a whole.



Contracts are now being made to supply the Carr-Stewartons in two qualities:—The 1st, in wood, with straw lid, made up by the best London joiners; and the 2nd, in straw, with wood frames, on the improved Woodbury principle. The prices will be shortly announced.

Correspondence.

HUMANITY.

To the Editor of the BRITISH BEE JOURNAL

DEAR SIR,—I hope in one of your papers you will insert a strong article on the subject of the suffocation of the poor bees in the autumn, as it will do much good among the poorer classes who believe more what they read in a newspaper than what one tells them. All here destroy their bees and pretend it is much more humane to do so at once than to take away their honey and let them die a lingering death. It seems impossible to convince them that the bees can be saved. "I knows better, I knows a man what tried it but it was'nt no good, the poor things died one after another," is the almost invariable answer, and they congratulate themselves on their humanity in using brimstone.

STAINES.

It is of little use to preach humanity to ignorant bee keepers. The better plan is to show them by example how easily a large profit may be made, by utilizing the materials, which they would throw away or destroy. Ed.

EXPERIENCE.

DEAR SIR,—Some of my hives are very light, and I wish to help them, but if I feed in the daytime, however dull, in about ten minutes the bees will be trying to get in at every window in the house, and they fight viciously. Last summer I fed them on a wet morning, and went out for the day. When I returned every house in the village was full, and the place in an uproar. All the jugs and cups in an alehouse about two hundred yards off were full, and no one could get any beer. They showed no disposition to go home at night. I feed on top as you recommend, and cover over close. What is the reason? Mr. Pagden in his book, says syrup honey is as good as any other. Is it so? I like your tinplate corner pieces for frames, but I don't see that they do away with the space over the frames. It would be next to impossible to get the crown board to press on all alike, but still it would prevent them canting.

GEO. HAILES.

Feed at night only, as so often recommended. Syrup is better than honey for bee food, as if properly made, it can have nothing deleterious in it.

THE PAST HONEY SEASON.

SIR,—I daresay there are many bemoaning like myself our unfavourable honey season, and to uninitiated beginners, a sadly perplexing one it has been. Hereabouts bees have done little besides clustering out. It may be in my simplicity that I look upon it as a sad sight, but I much fear it is a certain sign of much autumn and spring feeding being required, besides a large joining and consequent diminution of stocks. Bad tradesmen are said to find fault with their tools, so I suppose I must blame the extreme variations of the temperature for my bad prospects.

I find doctors (not bee doctors) say that the past season has been more prolific of colds and rheumatism than any similar period for many years and it is not to be wondered at when the vagaries of the weather are considered. At my hall door the thermometer at three p.m. on five successive days registered 111°, 62°, 110°, 72°, and 107°, and at the hour I write it is raining in torrents. How different from last season, when on the first of July, I saw a swarm hived in one of Pagden's small hives, and on the 29th of the same month witnessed the removal of a super from it of the net weight of 20lbs.

In a season like this, I confess myself an advocate for rationally sized hives in preference to the very large ones, now in so much favour.

To my sorrow I have all large hives, and although some of them have nadirs and supers, the bees are disgusting me by hanging out, and I daresay you will tell me to leave them alone.

There can be very little doubt but that a little practice is far more useful than a great deal of book reading, and were it not for your limited space I could describe some late and first attempts in practising amongst my bees, which have not only given myself courage, but far better still, have given a great amount of confidence to assistants.

TYRO.

Westmeath.

What is a rationally sized hive? The large hives you bewail possession of, cannot be too large, or nadirs and supers would not be required.

Would smaller hives have caused the secretion of more honey by the flowers? Would they not have added to the difficulties of this honey season by causing increase of swarms and subsequent "joining and consequent diminution of stocks"? ED.

A FIRST ATTEMPT.

DEAR SIR,—I have many times wished to take a bar out of my large hive, but have not summed up courage till yesterday, and then unsuccessfully. Having first become well veiled and gloved, I went at noon and took the two top laths off, when I found the bars of the outer compartments full and so glued together that I could not stir them. By this time the bees were out and about me in such numbers that I fairly believed they were swarming so I had to give it up. At the same time numbers of people in the road, and in several of the adjoining gardens were so badly stung, that both I and my bees are anything but welcome in the neighbourhood. I may add that in order to get clear I walked with my shield some distance from the scene, but they stuck to me for full an hour. Being somewhat determined to accomplish my object, I again tried about seven in the evening, but with about the same result. I should not like to kill the Italians but at the same time am anxious to have a little fruit (for the first time) having kept bees now six years. Now if you will answer the following questions I should be glad.

1st.—What is the proper time of day to pay them a visit?

2nd.—Is there any way of loosing the bars now fast without injury to the stock?

3rd.—How do you hush the Ligurians to by-bye while you trespass in their domain?

Permit me to say I went about the matter very quietly without fighting at them.

This stock has not swarmed this season. It appears crammed full up.

J. S.

Cape, Birmingham.

In reply we hinted that our correspondent had forgotten to smoke them, which from a letter since received seems to have been the fact. He has the whip hand of them now. Ed.

ARTIFICIAL SWARMING.

DEAR SIR,—A sample number of the *British Bee Journal* has been sent to me, and I shall be glad to become a subscriber. Will you kindly let me hear from you as soon as possible in reference to the following:

About May 15th, I took an artificial swarm from a 20 inch cottage (Pettigrew) hive, which was about ripe; the mother hive appeared to do very well afterwards, and in twenty one days after the top swarm was taken. I artificially took another, leaving pretty well of bees in the old hive. Since then the mother hive does not appear to have rallied, and seems to be getting lighter in weight; at present it weighs about 25 pounds or 30 pounds. The bees sun themselves on the floor board, and hardly do any work, and very occasionally some pollen is taken in. There are a great many robber bees always flying about the entrance, and some of them succeed in obtaining admission. I feel pretry sure, from observing to day, that there is no queen. There are not so many bees in the hive as I lett after the second artificial swarm. At night there is no pleasant hum going on, but all is quiet. The hive is a swarm of last year early in June. I have several other large cottage hive, and one bar frame hive. What had I better do? Your reply by return will much oblige.

W. R. D.

Edgbaston.

In reply we suggested that the second artificial swarm was made before the young queen had commenced ovipositing, so that the old stock, although perhaps having plenty of bees were without the means of raising another for themselves. A new queen was accordingly introduced, and they are now apparently doing well. ED.

WASP TRAP.

SIR,—Having been tempted by bee books, and bee keepers to lay out many pounds upon my apiary, it is really disgusting, the prospect of not getting back one sixpence to the pound. Still I know it is not the bees fault, so they must be carefully looked after and preserved from the ravages of the wasp.

Thoroughly adopting the very sound principle, that "prevention is better than cure" I last season waged my first war against the yellow pests, and for the remainder of my life shall bear a lively recollection of the venom of their stings. Between seeking for nests and paying liberally for their discovery, I succeeded in destroying great numbers, and you may imagine my unfortunate locality when I tell you that my diary shows a return of 111 queen wasps having been killed in the garden prior to the 25th June this year. Wasps are here in myriads, and are daily taken in numbers against the fruit walls, and around the hives.

I have, however, hit upon a wasp trap, which, up to this time has done wonders on the way of capturing them. I adopted it from finding wasps continually under covers that were placed over feeding bottles, where never a bee could be seen, I then got small bottles with wide mouths, put syrup into them, and am capturing them by hundreds. The great secret is to have small passages for the wasps, through which none but young bees can pass. I have tried these traps with boxes and skeps, and thousands of wasps have been taken without causing the death of a single bee.

Three of my large hives had two driven swarms put into each, none of them have swarmed apparently, and when the weather permitted, they have worked vigorously, but have had no additional room given. For days past they have been fighting with robbers. I suppose there is nothing to be done but to reduce their entrance?

TYRO.

Westmeath.

BEES REMOVING THEIR EGGS.

DEAR SIR,—I noticed on August 18th last, a curious and interesting instance of bees removing eggs. Nine days before, having determined to make two very strong stocks into three, I removed three combs from the first to be operated upon intending to add to them three from the second; but here an unexpected difficulty met me. The combs appeared somewhat irregular above, it is true, but still not so much so as to forbid an attempt at detaching them. They were very tender, the hive only dating from the previous May 9th, and being much joined beneath the first comb which was completely stored with honey was not liberated till its centre had fallen out. The fragile yet heavy mass clearly could not be replaced as it was, so my rather excited pets were allowed to do duty for the honey slinger, and then with twine a fixing was made which needed some remodelling to suit it to bee notions. To continue to remove combs after this would have been rash, and having no other hives with frames of the same size my new lot was forced to be contented with four instead of six combs and a queen. The mutilated comb was put outside and its irregularities caused it to fit very poorly to the three sound ones, which were placed in the same relative positions they had previously occupied. The adherent bees were but few, but as brood was rapidly hatching out there was a prospect of their numbers being quickly recouped. A week later the queen had laid an egg in every available worker cell, filling the refixed centre of the outside comb, although quite an inch intervened between this part of it and its neighbour. I thought it would be economy to give another comb from the first hive to enlarge the breeding space of the made stock, at the same time adding an empty frame and giving a bottle of syrup to prompt

to comb building. Two days later the added comb was found partially filled with eggs, but to my great surprise from the refixed comb every one had disappeared, all the cells being stored with honey, or much more probably, the syrup fed to the bees. The eggs about three or four hundred in number, struck me when I saw them as being isolated and showed at once that the queen was cramped, but that they should have been removed to more suitable positions when such was provided seems to me truly astonishing, and to point in the direction that bees not only can transport eggs, but that they really do so to a larger extent than is commonly credited.

OMEGA.

WHY DO PEOPLE KEEP BEES?

Some for pleasure, some for profit, some to study their natural history, others for experiment, and many for the sake of the moral lessons they inculcate. Those who keep them for pleasure may, as a rule, be esteemed of a kindly disposition, differing from their favourites in the affability of their temper, and their unwillingness to shew resentment. Although professedly keeping them for pleasure, their owners are often the most successful in obtaining from them an abundance of honey, because purely from love of them and their wonderful works, they carefully attend to their every want and protect them against every vicissitude of climate, the inroads of vermin, and the evils attending untidiness and neglect. Their bees do not die in winter, because they are not deprived of too much of their honey in the autumn, and there is little danger of that dreadful invention, the brimstone match ever interfering with the joyful hum of the pets so carefully housed and attended to. The pleasure of keeping them and watching their wondrous ways intuitively begets in their owners a desire to know more of the internal mystery of the hive, and they are gradually led into one of the most charming of all pursuits, the study of their naturul history, and here is revealed to them a new world, in which they may mentally wander at pleasure, full of wonder and delight.

These are those who strive to promote the culture of the bee and who are most strenuous in denouncing the hateful sulpher pit.

Some keep bees for profit, and grudge them every attention. Sordid and grasping, they rob them of every ounce of honey they can get at, and grumble that they cannot get more. Their apiaries are always in disorder and confusion, hives badly protected, and liable to topple over through the weakness of their stands and the rottenness of their housings. These teel no pleasure in the delightful hum of "Those singing masons building roofs of gold," beyond that which the anticipation of profit may produce, and in too many instances the cheerful labourers are rewarded for their industry by being put to a shameful and cruel death. These sort of bee keepers are not satisfied with bank interest for their capital invested, but for every pound laid out expect two in return the same year, without giving themselves any trouble or paying any attention to their bees.

Such returns ought not to be expected without some thought or care, yet when these are brought to bear, the profits are even greater, and fortunes might be made in some parts of the world, as the following letter from Australia will shew :

"I have just been taking honey from my bees, it is so plentiful here, that if we could only get 2d. per pound for it we should soon make our fortunes. We keep our bees in flour barrels, and I have just taken 200 lbs. from one. I have been digging it out with a spade." Illustrative of the plentifulness of honey he says, "If we take a handful of flax, cut off the tops and invert it, the honey drips from it."

I hope to resume this subject on a future occasion, and remain,

A LANARKSHIRE BEE KEEPER.

TRANSPORTING BEES.

In reply to Major Munn's enquiry, I am sorry to make the confession ot never having sent so much as a single hive to the Heath. Any purchases of common straw hives from cottagers apiaries to my own, I require to be carried inverted, with a pretty open cheese cloth tied over, through which the heated air passes freely, the weight of the honey resting on the top, and they are generally so fetched without mishap.

I have frequently seen large numbers of Octagon Hives on board Clyde Steamers, on their way to the heath, and they seemed most securely fixed. I understood they had been previously lightened of their flower honey, were each placed separately on light boards, which contained a large square of perforated zinc, with the same material in lieu ot moveable entrances and also tacked over top of upper box, which had all its slides drawn, admitting, thereby, the freest ventilation all through, and to prevent shifting on board, light little iron rods were carried up through the boards to the height of the boxes, and secured with small nuts at either extremity, and each being securely corded for suspension if desired, were borne from rail to steamers in considerable numbers together, on light hand barrows.

Possibly "A Lanarkshire Bee Keeper" or "Stewarton Apiarian," both adepts at moving bees long distances by sea and land, may favour your readers with full details.

A RENFREWSHIRE BEE KEEPER.

THE STEWARTON HIVE AND SYSTEM.

In the August number your courteous contributor, Major Munn, seemed disposed to award the palm to Thomas Wildman, as the inventor of the Octagon hive and non-swarming plan of keeping bees in colonies, quite overlooking the priority of Geddie's patent, pointed out by me the month before. The oversight was so very apparent to any reader interested in the subject, that I did not think it worth while drawing his attention to it last month.

A correspondent, Mr. William Carr, of Manchester, has, however, assumed the duty of calling both the Major and myself to account in last number.

He commences his criticism by saying he thinks I am mistaken in supposing Robert Kerr, of Stewarton, invented the Stewarton hive in 1819. If Kerr did not

invent the Stewarton hive, I shall be interested to be informed who did?

To prevent all such carping, I was careful to lay before your readers, at page 38, the antiquity of Octagon Colonies, and your correspondent, in his copious quotations from Moses Rusden's work, fails to adduce the smallest glimmering of information on the point at issue, while he totally ignores the fact that I had previously given that author his due place in connection with the Octagon hive.

John Geddie obtained his patent for behoof of self and partners, on 23rd April, 1675, and in his work published in the same year now before me, entitled, "A new discovery of an excellent method of Bee Houses and Colonies," states he hadexperience of octagon hives for seven years previously, and although styling himself "Gentleman Inventor," he rather disengenuously leads his readers to infer the octagon hive was exclusively his own invention, dating from the year 1668, but Moses Rusden, the apothecary, who sold licences for Geddie's patent, and may have been one of his partners, in the edition I possess of his work, published in 1687, with straightforward honesty in the epistle dedicatory says, and it is so apropos, I quote the passage verbatim, "And we shall now find their qualities and their works, better discovered, and demonstrated by the transparent hive first shewed to us by Dr. Wilkins, late Bishop of Chester, a most eminent member of your society, (Royal Society at Gresham Colledge) which have since received several variations and improvements by one Geddie, and since by myself." This clearly establishes the fact that there were octagon Storified Colonies in existence years before Geddie obtained his patent, or Rusden sold a licence. Whether Dr. Wilkins was the original inventor or had procured his hives from some one else, remains a mystery. When next Mr. Carr takes up his pen to enlighten your readers, as to the origin of Storifying, his researches must ante date 1668.

In your July number I have already endeavoured to show that Robert Kerr invented the hive known as the Stewarton, in 1819, whether the idea of keeping bees in Octagon Colonies, originated in Kerr's mind or that he had seen or read anything of Geddie's earlier patent, I have been unable to trace, but rather lean to the supposition, that Kerr, like Watt, with Newcomen's Engine, had brought his nice mechanical skill and thorough acquaintanceship with bee keeping to entirely remodel the rude original. Your readers must bear in mind that Geddie's patent boxes were simply of Octagon form, with a central five inch hole merely for communication, that the inmates were kept from swarming by nadiring with an empty box as required below, and the removal of the uppermost as likely to contain most honey; the contents of which being necessarily similar to those of a common straw skep, as I have already pointed out, a conglomeration of mixed honey, pollen, young bees, and grubs in all stages, which Rusden did not fail to deplore, as if kept over any time for exhibition, it got into a state of corruption.

To induce the bee to store pure virgin honey in distinct and separate compartments of the hive was Kerr's happy conception, and by his most ingenious contrivance of the bar and slide, so facilitated communication between the several boxes composing the colony, as to render them to all intents and purposes one, while he, by the like contrivance, shut off the queen nurses and pollen collectors of the central breeding position from the honey department.

Your correspondent passes from the origin of storifying, to the manipulation of the Stewarton Hive in particular, and very possibly from lack of acquaintanceship with his subject, confounds two distinct operations together, nadiring and supering, setting faith on no better data than because Rusden, some two hundred years ago, *nadired* his boxes after a particular fashion, consequently apiarians of our day should *super* theirs, and although his plan is contrary to all experience of good management, yet our practice he calmly "condemns." Unfortunately for the comparison Rusden had no supers to employ but his upper breeding box, which had to do duty so far for one. Had he (Rusden) manipulated agreeably to your correspondent's theory "when working for honey" he would have set the empty box added, between it and the lower, as he (Mr. Carr) says, "I find if there is not an empty space between the super and the stock box, the bees will often swarm." Rusden, however, knew too well the evil effects arising from creating vacuums in bee colonies.

Your correspondent states that by the mode of supering, I recommend "The Queen is also tempted to enter the super, and spoil all the beautiful white virgin combs by breeding in them." Certainly this is most likely to happen by his mode, not mine, he keeps the empty comb next the stock hive, and the moment the queen passes from the breeding boxes she meets the very thing she is in quest of, empty comb in abundance, and she rapidly deposits an egg in every vacant cell, and the honey results of the season are lost, whereas by the usual mode of manipulation with the honey in lowest boxes in close proximity to and in fact but a continuation of what is stored in top of stock hive, the queen passes into the super and perambulates the lower box in vain for an empty cell into which to deposit an egg, and discovering her mistake, she speedily retraces her steps. Confirmatory of this view in my strong Stewarton colonies I have never yet once found brood in a super, whereas, in the days of my noviciate, when working with eked supers, over central holed straw skeps, alas! it was, unfortunately, too common an occurrence.

Mr. Carr ridicules the idea of extra labour being incurred by bees being compelled to carry their loads and shove their way up through projected additions to their domiciles, still whatever loss of time and unnecessary physical exertion is thereby entailed by every honey gatherer, as a sequence, must inevitably deprive their owner of just so much honey at the season's end, but will our little favourites be so put upon? Supposing, for arguments sake, that we invert the pile of supers, placing them, as your correspondent would like them, the heaviest on top, and that their number be seven, similar to the one referred to in your opening number. At such an altitude from the entrance, I leave it to the practical apiarian to say if it would be at all likely they would put themselves to the trouble of dragging up their load so far past so very many inviting empty and filling cells, and what prospect would there

be of that all but sealed out super ever being completed in such a position. Your contributor says truly, and the expression was my own, "That bees store their honey at the point furthest from the entrance," (of *their hive* of course,) but then he must bear in mind that supers are not their hive, but merely artificial adjuncts thereto in the first instance, optional with the workers whether they accept them or not, according to circumstances, but why shed so much ink on a point of every day occurrence during the working season? When my strong storified colonies become full and ripe for supering, I generally, to save subsequent trouble, give a couple of supers to each at the start, and do the bees agreeably to your correspondents preconceived notion, mount up into the upper and commence work therein? I never yet met in all my experience, with a single instance in which they did, their invariable practice being to begin in the lower, and when it has been fairly taken possession of, with the advance of comb building therein, they gradually extend upwards into the upper, forming into a dark mass at either end, by and-bye rope festoons are suspended all through it, and comb building is begun, and so on progressively with every additional super.

Another correspondent, Mr. C. W. Smith, draws attention to a hive called the "Carr-Stewarton." Should it be the hive in which my reviewer expects the bees instincts, to quote his enlightened expression, "to give the lie" to a system of management by which they have for the last fifty odd years, yielded up tons of the finest honey comb for the market, then I would most respectfully suggest the propriety of the inventor distinguishing his discovery either as the "Carr-Manchester" or simply the "Carr" presuming it does not possess the form, and is to be manipulated in a manner, the reverse of what is pursued with the well-known and justly celebrated Stewarton.

A RENFREWSHIRE BEE KEEPER.

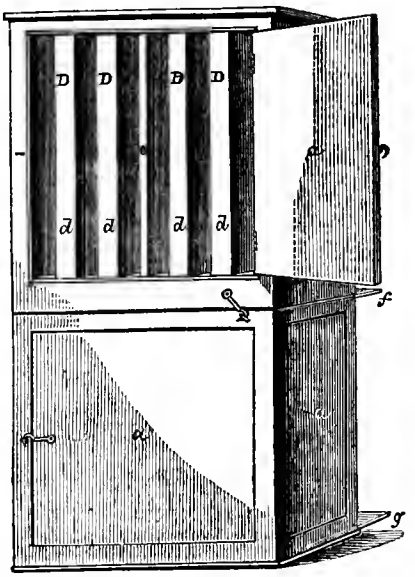
REMINISENCES.

SIR,—Thomas Wildman proved his wisdom by rejecting the premium of 100 guineas from the Society of Arts, when he came up from Plymouth in 1766 to display his wonderful power over bees; and in 1768 receiving the patronage of the king, and humbly dedicating his book to the queen; and in this the 4to. edition, divulging the great secret of his art of bee management. He displayed the command he had acquired over the instinct of the bees, before a large number of the nobility and gentry, who had so well swelled the list of subscribers, but still, like a modern "horse tamer," demanding a fee for the exhibition; so Thomas Wildman may have performed at the "Three Hats" at Islington; but Daniel kept the shop at 326, Holborn, and Daniel continued to publish his pamphlets for the sale of bee hives until 1812. The first mention of Mr. Wildman is made in the *Gentleman's Magazine*, of May, 1766, page 389 (vide). "A native of Leicestershire attended the Society of Arts, with three different swarms of bees, which he made to fly in and out of their hives at pleasure. His discovery was much admired, and he was ordered a premium."

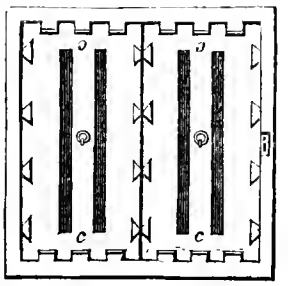
Mr. Wildman, who has a most surprising command over bees, has lately shown himself to divers of the nobility, surrounded with bees: Thus fortified, *bull dogs have been set at him by his own desire*, whom he repulsed by detaching a single bee and sometimes two of them, to the astonishment of all that have seen him! His art it is said is to be communicated to the public, for which the Society of Arts is to allow him a premium. His power over bees is incredible, and therefore shall forbear any more instances until the secret is disclosed.

Mr. P. Le Neve Foster, the secretary, has kindly written to me thus: I find on reference to the minutes of this Society of Arts for 1766 (not 1866 as quoted by you) that Mr. Thomas Wildman, of Plymouth, submitted a fact to the society in reference to "*removing honey and wax from bee hives without destroying the bees.*" The committee proposed that an award of 100 guineas should be given him if he would make public his plan of effecting this, but on his declining to do so, the matter lapsed.

Wildman had no other secret, but that *smoke* produced fear amongst the bees, and by skill and practice first securing the queen bee; anyone could manipulate amongst bees, to extract the honey combs, &c. I have already added another new fact that the queen bee *does not sting*, and whilst more experienced bee masters prove the contrary, I turn to hives, as I wish to leave the storifying plan Thomas Wildman advocated, and draw now upon the statements he has given regarding the *mahogany box* which must be looked upon in my opinion as the "experimental hive" in which he took about the bees he had to exhibit. By its means he had the bees constantly under his inspection in the apiary, but not for the purpose of collecting honey, as bees kept in this constant state of *agitation*, do not thrive, but, as he very properly observes "the destruction of many hives of bees will be the consequence; as every one will find on their first attempt to perform any feats of dexterity, &c.," and adds, "I have unwarily promised to reveal the secret, and am therefore under a necessity of performing that promise *with regret*," as Wildman adds:



The box hive is thus made :—Plate ii. fig. i. and fig. ii., two boxes made to part in two, is eighteen and a half inches high, or nine and a quarter inches each high, and ten inches square.



It consists of a frame, *a a* doors on three of the sides, the forepost having a fixed cover. The two boxes are fixed together by means of hasps. The top box has a cover, moving on hinges, and secured in the forepart with a lock. Within this the upper box are sliding frames, in which the bees made their combs, fig. 2, *c c*. This frame is three and a quarter inches thick, eight inches wide, and eight and half inches in depth, and each frame has four slides, two in front and two at the back, *a* fig. i., each an inch wide, and half an inch asunder; intended to prevent the bees extending their combs to the glass, which would render the taking them but inconvenient. There is an upright partition, *e* in the middle of which there is a division of half an inch, to afford an easy passage to the bees; and two similar passages in the bottom, to give a free passage to the bees to go from one box to another; for this box stands on a lower box, which, instead of sliders to contain the combs, has six bars, to which the bees fix the combs in the lower box. The two boxes are fixed together by means of hasps as already stated. The lower box has three panes of glass fixed in the three doors, with brads, which are easily drawn out, when there is occasion to take out the panes of glass. Between the upper and lower boxes there is a slider *f*, which is put in when the frames with the combs are taken out of the upper boxes, or when the upper box is changed. A like slider is put into the bottom. After such an elaborate and puzzling a description of Mr. Thomas Wildman's new invention, I should not be surprised to find your readers declaring, "Give me again a hollow tree."

W. AUGUSTUS MUNN.

VENTILATION.

——o——

DEAR SIR,—Being an old disciple of your own in bee matters, I know you will endorse the opinion that but few bee keepers are fully aware of the advantage of upward ventilation and that many stocks every winter suffer or die simply because this has not been provided for. The idea, correct in itself, that bees must be protected from cold as far as possible during the inclement months, leads, not unnaturally, until experience points out the error, to all sorts of stifling.

Well do I remember my first stock coming into my possession. Nor have I yet forgotten the anxiety with which it was wrapped around according to the advice of the vendor at the advent of October, and the entrance of the hive reduced to a hole so small that only one bee could pass at a time. It will not surprise you to learn that before many winters the Fates had introduced both dysentery and foul brood to my notice.

That successful wintering demands strong stocks and that strong stocks cannot well be wintered without ample ventilation is now the common opinion of apiarians, but since generally that is done most thoroughly and intelligently, of which the reason is best understood, it may not be uninteresting to some of my fellow readers of the *British Bee Journal* to enquire why ventilation is a necessity. Two reasons at once may be given :—

1st.—That bees are continually charging the air about them with noxious gases which need removal, and

2nd —That ventilation is the only natural means of keeping the hive in a dry condition.

Let us now consider the first of these propositions. In the economy of the bee the food is devoted to two

distinct uses. The building up of the fabric of the body for which pollen principally is consumed, and the formation of animal heat for which honey is required, to this might be added the elaboration of wax produced by a chemical change from the honey in a manner similar to the formation of fat from sugar in man and animals. Honey has for its staple glucose or grape sugar, which consists of Carbon, Hydrogen, and Oxygen. The last two in the proportions which form water, and although it is by no means scientifically correct to regard glucose as the union of water and carbon, yet for our present purpose such a proposition would be quite sufficiently exact, while it will greatly simplify the matter to the ordinary reader. The honey, having been absorbed into the fluids of the bee, is brought into contact with the atmosphere in the tubules, which permeate the body of the insect in every direction and terminate exteriorly in the spiracles or breathing holes; of which there are five in each side of the abdomen, and two in the thorax. These tubules are lined with elastic muscular fibres placed spirally to prevent their closing by the movements of the insect, and while the bee seems to possess the power of voluntarily expanding and contracting the capacity of these little tubes so as to change the contained air, every alteration of the insects attitude certainly does bring about this change or as we should phrase it in relation to higher animals "quicken the breathing."

The oxygen of the atmosphere, thus brought into contact with the food in the organism, enters into chemical combination with it. Thus carbon is converted into carbonic acid, a colourless invisible gas, while the hydrogen and oxygen of the honey are liberated in the form of water, so that the expired air is charged with vapour and loaded with the above-named pernicious carbonic acid.

By tabulating roughly the constituents of one and a half pounds of honey omitting the essential oils, &c., which exist, is very small amount we shall see best how it is changed.

1½ lbs. of Honey	9 oz. Water	9 oz. Water.
	6 oz. Carbon	6 oz. Carbon.
	8 oz. Oxygen 1 oz. Hydrogen	9 oz. Water.

16 oz. of oxygen from the air being united with the 6 oz. carbon, we obtain 22 oz. carbonic acid gas and 18 oz. of water, which are thrown into the air of the hive by the consumption of 24 oz. of honey.

Omitting to notice the water until we reach our next view of the subject, let us trace the produced 22 oz. of carbonic acid, occupying about 12 cubic feet at ordinary temperatures. In a Woodbury hive by example, which holds about 1,900 cubic inches, the combs, stores, frames and bees would fill quite 1,400 inches, so that the air space would not be greater than about one fourth of a cubic foot. The carbonic acid therefore produced from the consumption of one and half pounds of honey would fill the available space in the hive 48 times.

Nor is this all. The air is only one-fifth by measure oxygen, the other four-fifth (being nitrogen) and the carbonic acid occupies the same space precisely as the oxygen which united with the carbon to produce it, so that we find if the whole of the oxygen of the air introduced had been converted into carbonic acid by union with carbon, the air in the hive must have been entirely renewed 240 times. And further, the presence of carbonic acid in a large amount is so deleterious even to insects, that probably not more than 10 per cent., at most, of the oxygen could be utilized in the production of carbonic acid, so that we are shut up to the conclusion that the consumption of one and half pounds of honey needs the passage through the hive of not less than 600 cubic feet of air. The escaping vitiated and damp atmosphere from the hive carries away nearly the whole of the consumed honey, so we see why, during long continued cold weather, stores are reduced, it may be many pounds, while the bees have had no opportunity of discharging themselves. Indeed it appears that fæcal matter is scarcely produced by consumed honey, but by the wear and tear of tissue (*i.e.*, the bees body) consequent upon activity, and this wear and tear is chiefly made good by the assimilation of pollen. Hence no doubt the disturbance of bees during winter stimulating them to fitful exertion tends to cause them to consume pollen and so distend their bowels.

The immediate necessity for honey as a food is the production of heat, and just as truly does the carbon of the honey burn in the body of the bee as coal burns in the furnace. The temperature at which combustion takes place in the latter instance is truly much higher, but the products and the chemical changes are identical while the evolution of heat is precisely the same in cause in each instance. A very simple experiment with a lighted candle or lamp will corroborate this. The material burning is like honey, carbon, hydrogen, and oxygen. Oxygen united with the carbon gives carbonic acid, while oxygen and

hydrogen uniting produce water, which may be taken from the flame by passing through it a cold knife upon which the generated water will collect in dew. The candle in like manner while burning vanishes into the atmosphere eliminating heat as it disappears.

It is interesting to observe that the larvæ are not honey consumers but are fed upon bee chyle, that is, elaborated honey and pollen in the condition for immediate assimilation and conversion into the positive body of the creature. They are consequently not heat producers, and need the brooding of the nurses in order to have their temperature so maintained that the nutritive processes may be continued. A dense comb of brood is as quickly cooled as a comb of stores.

Experiments have shewn that the larvæ of insects generally are but little warmer than the atmosphere surrounding them, while the temperature of an individual bee during repose has been found to be about 4° above the surrounding air, but during activity 10° or 15° higher and when aggregated together in clusters and the thermometer thrust amongst them it will be found to rise often as much as 40°. That activity tends to increase the amount of heat developed by animals generally is too well known to require argument and this will explain why bees in endeavouring to resist the effects of intense cold will flap their wings in cluster.

This exertion is similar to that of the hod-man who flaps his arms on a frosty morning. In each case breathing is quickened, more food consumed, more carbonic acid formed, and more heat produced. Dr. Carpenter says that a "humble bee was found to produce one third of a cubic inch of carbonic acid in the the course of a single hour, during which its whole body was in a state of agitation from the excitement consequent upon its capture, and yet during the whole twenty four hours of the succeeding day, which it passed in a state of comparative rest, the quantity of carbonic acid generated by it was absolutely less."

From these considerations it is manifest that unnecessary loss of heat is exactly equivalent to unnecessary loss of honey, the walls of the hive, therefore, should be as non-conducting as possible, but we shall see when considering our second head that want of ventilation has the effect of increasing their conductivity, and that though heat is carried away by admitting cold air which necessarily leaves the hive warmed by the bees, yet that even this loss, attendant upon thorough ventilation, is more apparent than real.

During the mild part of the year, if sufficient space be permitted for entry and exit, bees will efficiently ventilate for themselves. Huber states that he found the air in a healthy hive nearly as pure as that outside. But in biting weather they are driven from their hive door to their cluster. An isolated bee could then no more continue his vitality, than could a single coal continue to burn in the fire grate.

The cluster warm within throws up from itself the respired air, which strikes against the hive roof, and there, if not allowed to escape, remains until cooled to descend upon the inmates. It can only escape at all by that law of gaseous diffusion which causes all aeriform bodies to commingle. It at best passes from the contracted door very slowly, and not until the air within is all more or less carbonised. Under the stifling plan before referred to, if the stock be strong, many breaths quickly make the air unfit for respiration, and the bees are in the condition of coke in an Arnott stove, with the draught hole closed : all or nearly all the oxygen being replaced by carbonic acid, the process of heat production cannot go on and the bees stupefied by impure air and the inevitably falling temperature (for the folly of stopping ventilation to keep bees warm really makes them the victims of cold) drop from their cluster to die and subsequently introduce disease by their decomposition.

Let us now consider ventilation as the only natural means of keeping the hive in a dry condition.

We have already seen that the consumption of 24 oz. honey produces no less than 18 oz. of water, which is given out by the bees in the form of vapour, in the air escaping the breathing tubes. Air is capable of holding more and more water in solution as its temperature rises and conversely warm air upon being cooled deposits the water it can no longer contain in the form of dew. The air leaving the cluster of bees, although carrying much dissolved water, is still dry because warm, and if allowed to escape from the hive, no accumulation of moisture takes place but if retained, the sides of the hive cooled down by the action of the external air, quickly lower its temperature and dew, often accumulating into little streams of water, is formed for the same reason that the windows of a warm room on a cold day are often perfectly wet within, because the warm air touching the glass, has its temperature reduced, and the water it carries expressed from it.

Under the plan we are deprecating, the air except that in the cluster is continually in a condition of super

saturation and the combs free of bees quickly become coated with mildew, which in turn gives a better hold for dew, and renders the coddled inhabitants still more wretched. The hive walls being constantly damp, not only conduct heat with more facility than if dry, but the water upon them acts as a sort of middle-man in the transfer of heat to the exterior. Although air when dry is a very bad conductor when moist it is freely cooled by a wet surface, so that a hive bedewed within, increases immensely the difficulty of maintaining the required temperature.

If upward ventilation be given, the hive must be dry, as all air enters at a lower temperature than it leaves, and consequently cannot introduce so much moisture as it is capable of carrying away.

In conclusion, experience and theory seem to say, "Give ample ventilation, and allow as little heat as possible to escape through the walls of the hive."

F. CHESHIRE.

Queries and Replies.

NOTICE.—*When queries on any subject are nearly synonymous, we only publish that which has required the fullest reply.*

QUERY No. 56.—The comb in my box hive which last night was as white as milk, I found this morning had become very yellow; it is well ventilated at the top with perforated zinc, on a round hole some three inches in diameter, must I ventilate still more? or how prevent the discoloration? A straw hive I have with glasses on the top, was to-day 80° which I understand a well-peopled hive should be, yet the glasses are full of steam. I have inserted bits of sheet lead at the bottom to give ventilation, will this be right? The perforated tubes sold with the glasses are perfectly useless for ventilation, as the first thing the bees do is to fill up every hole. Please give in your next number some instructions on ventilation, as the beauty of the comb depends I suppose, very much on this. What is the objection to "Nutt's Collateral Hive?" From a remark in the Journal I see it is not approved of.

NOVICIATE.

REPLY TO No. 56.—We think the mischief is caused by the very means you have taken to prevent it, too much ventilation. It is a great pity so much theoretical nonsense has been written about bees. Much that has been so written was doubtless intended to promote the sale of some article said to be necessary, as in the case of the ventilating tubes, which as you justly observe, are immediately closed up by the bees, proving to our minds that they do not require them, and we think they are good judges in such matters. We never ventilate supers, and do not recommend others to do so.

When bees are honey gathering and are overcrowded, we set the hive up nearly half an inch off its floor board, so that they can get out all round if they like, and they require nothing more.

Ventilating through the supers allows all the bad vitiated air in the hive to pass through them, and must lead to many changes of temperature, which the bees cannot prevent. If too hot they will hang outside, but if too cold what are they to do in such cases?

Upward ventilation is bad during all the breeding season, and interferes very much with the production of brood and bees. The only real use of the tin tube, hanging from the top of a glass super is that it enables the bees to attach themselves to the upper part of it, which otherwise they could not do, and attracts them to it for the purpose of closing all the holes in it, otherwise it is a delusion and a snare, misleading as to its true purpose and intent. The steam on the glasses on your straw hive would disappear if the heat were economised instead of being dissipated, and if you clothe them with wadded coseys, like those used to keep a teapot warm, it will not appear again.

The observation as to the Nutt's hive was called forth by the complaint by the querist that she "always found brood in the collateral boxes." ED.

QUERY No. 57.—A doubled June swarm in the middle of July would not take possession of a super, but showed strong signs of swarming, not wishing them to do that, I put a nadir under, (called here a riser) which put a stop to their swarming fancies. Would you recommend me to take this nadir before the winter, or shall I leave it to form a strong stock next year, if to take it what will be the best system to adopt? Some of my friends have listened to me sufficiently to allow me to drive their stocks when the smothering time comes and will give me their bees, would you recommend me to join them to my present stocks in straw skeps? In your letter to me about transferring you recommended me to wait until they swarm next year before I move them, why not do it in the autumn of this year, unless you fear my inexperience which certainly is great, but trust in your teachingsto remove. "Renfrewshire Bee Keeper" mentions several times impressed wax sheets as guides in the supers. Will you kindly ask him to give us his experience with them, and whether they pay their cost. Would it not be a good plan to adopt the slide of the Stewarton Hive to the Honey board of the bar frame hive, at all events to the end frames to give admittance to the honey gatherers only. The journal improves with every number; may you and it go on and prosper.

T. BURSTALL.

Carrick-on-Suir, Ireland.

REPLY TO No. 57.—If you remove the nadir you will only find in it combs containing little but pollen which will be of no service to you unless you preserve them until next season, and give them back again for the use of the bees; or you might utilize them for the bees, which you will obtain by driving your neighbour's stocks later in the Autumn. The very best course to pursue is to drive their bees, cut out all the brood comb and fix it in the bar frame hive as shown in Journal. The brood comb is worthless to them, but invaluable to you under these conditions, and out of three or four of these stocks you could fill a Woodbury hive. You will astonish them in spring with the result if you act according to directions given, and will do more to advance bee culture in your neighbourhood than ten years talking or writing would do. "A Renfrewshire Bee Keeper" would not have recommended wax sheets if not quite certain of their value in securing straight combs. As to the Stewarton slides for bar frame hives generally, we are leading up to an idea which we think will simplify the matter very much, but cannot exhaust such a large subject in a hasty manner. We forget our reasons for advising you to wait until next year for transferring your stock, but if the combs are not too tender, and you feel able to do it, you might fill a second Woodbury with the nadir and other spare combs now in it. ED.

QUERY No. 58.—I have had some little experience in bee keeping which I hope to give you someday, and I heartily welcome the *British Bee Journal*. I shall be much obliged by an answer to the following queries in any one of your numbers. Is there any means of preventing the destruction of bees by swallows, which have done my 20 hives very much injury the last two years? Last year there was a scarity of swallow food, but this year flies have been plentiful. Is it inevitable from the congregation of many stocks of bees, which may account for mine not suffering before? The sparrows have taken possession of the swallows' nests, but they have come in twenties nearly every afternoon when fine, sweeping round the hives just as the bees were returning heavily laden. One was shot, and found with a bee in its mouth, but was thrown away before I could examine him. The swallows have since been more timid, but they have frequented the locality, and I believe gathered a number of bees just outside the garden wall. A net may protect the bees in some degree, but you may know of a more effectual remedy. The vicarage is on a high site apart from the village, and is exposed to the south-west winds. My hives stand facing east, with a wall about 4ft. high behind, and a path between the wall and the line of hives, each on a stump. There is also a wall about 7ft. high at right angles on the north. Our soil is clay, which may be one inducement to the swallows in our garden. Do you recommend shallow supers? and of what depth? with or without bar rests? and also raising the stock hives to what height to prevent swarming according to "Renfrewshire Bee Keeper?" Has Mr. Murphy an agent in England for his Honey Slinger? The best method of cleaning old comb, and making it into wax? My next few queries perhaps you will kindly answer by post. Have you heard of the American bee house with upright wooden posts at intervals on which the bees build extending from post to post without swarming away from the house? The honey is removed in the winter from the top of the posts. Is there any reason against not trying the same system in England? A book or an article on different plans adopted both ancient and modern among the nations would be interesting and useful. My experience of the nadir system is utterly bad. I should like to know of some one who has succeeded.

O. B. T.

Shepton Mallet.

REPLY TO No. 58.—We think the bees may be protected from the swallows when near their hives, by fixing one or two pieces of fine netting, either of wire or string, so as to to prevent their sweeping past the hive, a few strings or fine wires looped from the tops of some fine branches of trees to the tops of others arranged to interlace in front of the hives so that the wind may keep them moving would be easy of adoption, and inexpensive and would greatly balk the swallows flight. A piece of looking glass hung obliquely by a string from a branch, is an effective temporary scarecrow with most predatory birds, especially when they have any fear of a gun, as its flashing is rather astonishing to them, and they do not like the Jack o' lantern which it throws among the trees at all times and in many changing directions. Shooting at them even with blank cartridge would open their understanding to the fear of the flashing, and perhaps one or two of them hung raggedly by one leg, might signify to them that it is dangerous to come near such a curious combination. We cannot advise their wholesale slaughter or the prevention of their breeding by the destruction of their nests, as we really ought to be grateful to them for their services in general.

Our apiaries are not troubled with them, although they are very numerous here, so we cannot think the accumulation of stocks renders their predations inevitable.

Outside the walls of the apiary, it is almost impossible to defend the bees, but as they are then more scattered, the danger must be greatly lessened.

Your queries as to supers have been anticipated in the June number of Journal. "A Renfrewshire Bee Keepers" letters will give you the other information thereon.

Our article on swarming in same number answers your query in that respect.

The present number contains an advertisement of Honey Slinger, but as the freightage of Murphy's costs as much as the Slinger itself we think it unlikely that he will establish an agency in England.

To obtain the wax from old combs, they should be enclosed in a canvass bag, well boiled in a copper, and while boiling they should be pressed so that the wax may be forced through the canvass, then when the fire has nearly gone down, the bag and its refuse should be pressed to the bottom and fixed there until all is cold when the wax will be found solid on the top, and may be removed for purification.

Although acquainted with most of the leading systems in use in America, we do not remember the particular plan alluded to in the latter part of your letter, nor do we quite understand the arrangement of the posts.

It is hoped that the Journal will include articles such as you describe, indeed the subject is already being dealt with, as you may see in the numbers already published.

Perhaps some brother bee keeper will give his experience with the nadiring system.

QUERY No. 59.—I have a very strong Ligurian stock, the combs are pretty straight, but not built in the frames. They are about half in and half out of the spaces, when and how would you rectify them. Is it too late or advisable to add a deeper hoop to one of Neighbours Cottage hives to increase the size or height and feed them. I have been offered a hive (straw) of last year, very big. Net weight, 45lb., very strong, 16s., for transferring I think I shall make a hive of about six combs. What can I do with it.

J. F. N.

Wandsworth Common.

REPLY TO No. 59.—We would lift the frames of comb bodily out of the hive, and set them wrong way upward, then cut cleanly all round them, and fasten them in the frames as in transferring. The sooner you do it the better it will be for the bees; they will mend all the severed attachments and polish all up nicely. The reason for turning the frames upside down is to prevent the comb falling out when cut.

It is late to nadir hives now, and scarcely advisable to make the attempt to force comb building. In such a case as you mention you may instead only procure that the bees store the syrup, and so make solid walls of comb, in which they will not be able to hive. ED.

NOTE.—It is not a good plan to transfer *stocks* from straw skeps at this late season. Better allow them to remain snug where have prepared for the winter, and place their springswarms in bar frame hives, after which, when all the brood is hatched out of the cells, the comb, may be easily transferred without waste or danger. ED.

QUERY No. 60. I have a stock of bees in the crown of an old tree, which stands in the garden, I have now had them for five years and have never yet had a swarm from them, and cannot get at them to take any honey. Do you think I could drive the bees out and split up the crown (which by this time is not far from decayed), and transfer the combs to a bar frame hive, and which is the best way to do it? and would Aston's bee trap be

any good screwed over the entrance, so as to put a hive on the other side of it, that the bees could not return to the old tree? Which is the best time of day to operate, and must the stump be well beaten? The entrance to the stump is made of wood, and can easily be stuffed up. An answer by return of post will much oblige.

T. G.

City Road.

REPLY TO NO. 60.—You do not clearly inform us whether your bees are in a hollow tree or hollow log; if in the former you must bore holes with an augur until you find the lowest extent of their combs, and saw it off there to reduce their abiding place to the condition of the latter. Then by boring find the extent of the combs in an upward direction, reverse the log, smoke the then lowest end and drive the bees into a large skep by drumming at the sides of the log. Stand the skep containing the driven bees on the old stump or stand, and carry the log away to the place where you intend to operate, stand it on its end in its original position, and with a sharp saw cut it all round, beginning near the bottom, so as to make the pieces of comb of the depth of the frames you intend to use. Some care will be required in this operation, as combs are not very firmly attached at the sides, and if roughly used, they may fall to the bottom in a mass. Having cut all round, pass a very sharp knife through the combs so as to cut them clean off without making ragged work, set the section so cut off, on one side, and cut again and again if necessary, until you have removed all parts containing brood comb, which you may then easily remove and insert in the frames. The best time to do this will be the evening, and before commencing it would be well to confine all other stocks by closing their entrances with perforated zinc. The stump will require to be beaten sufficiently to make the combs jar a little, but not sufficient to crush or break them. Do not give too much smoke or the bees will be overcome with it, and fall down to the wrong end of the log. Having fixed the combs in the frames, and returned the bees to them, you must use your own judgment as to the use you make of those containing honey. You will doubtless find a great deal of pollen in some of the cells, and the honey will most probably be dark, and perhaps not worth breaking up the combs for. ED.

QUERY NO. 61.—I enclose stamps for the Bee Journal, and wish to ask a question. My bees are tormented with robbers, I have tried two or three things. I have narrowed the entrance, and I have shut them up at night, and have used rags and naptha and singed them, but all of no use. If you can inform me what to do I shall be obliged.

W. J. LARK,

Redhill, Aug. 10.

REPLY TO NO. 61.—The information you give is so meagre, that we must imagine the condition of your apiary for ourselves. During such splendid weather as the present, there is no occasion for bees to rob each other, and they would not do so if facilities were not offered. We suspect the stock now being robbed has swarmed some time since, and has failed to raise a young queen, and is consequently in a dwindling listless condition. If such be the case, you had better drive out all the bees, and appropriate the contents of the hive, as there will be no brood in it.

If not queenless, send it a mile or two away from home for a few weeks.

If your stock is being robbed by another of your own, exchange places with them.

If stranger bees are robbing, shut up your own bees for a day or two, placing empty hives on their stands. It is no use to shut them up during the night as bees do not rob then, unless very close together on the same stand.

The remedies you have tried would be more likely to injure the robbed stock than to keep away intruders. ED.

QUERY NO. 26.—For years I kept bees in common straw hives, working boxes and caps on top, and simply protecting them from sun and rain by a roof only. I then used to get very large quantities of honey. Of late years I have introduced Woodbury and Pettitt's 10 frame hives in an enclosed house with doors at back, and ever since I have had nothing but loss and failure, every winter most of my stronger stock, although well fed up in autumn, are attacked with diarrhœa, and either die off or are so weak in spring, that they never rally till autumn. I am now putting up an open shed, or roof 13ft. long and low and wide enough to entirely protect the hive from the sun and rain, it is entirely open front and back, as in former years, and trellis work ends. The hives are all provided with Woodbury square covers and on separate pedestals, 4ft. from mouth to mouth. As I want to prepare this autumn for a good year in 1874, kindly give me your advice, which I shall be glad to follow.

J. F. N.

Wandsworth.

REPLY TO NO. 62.—If you will really follow our advice, you will not build the proposed shed, or if you do, do not by any means shut out the sunshine during the winter months. You may shade the entrances of the hives as much as you please, to prevent the light shining into them and tempting the bees forth into sharp frost or snow to their almost certain destruction, but it will be very unwise to deprive them of the sun's rays as a means of warming and drying the hives. Your bees of late years seem to have suffered from dysentery, brought on probably by feeding them too late to enable them to evaporate the over moist food and seal it up in the cells, together with insufficient ventilation, and the absence of sunshine to aid them.

Your plan of keeping them on separate stands is quite right, but each hive should have a separate cover also.

The best authorities in America recommend where bees are wintered on their summer stands, that they should be allowed the full benefit of the heat of the sun to aid them as we suggest, and separate stands in this respect are essential. ED.

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THE

British Bee Journal,

AND BEE KEEPER'S ADVISER.

CONDUCTED BY CHARLES NASH ABBOTT, BEE-MASTER, HANWELL, W. LONDON.

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[ENTERED AT STATIONERS HALL.]

[No. 7. Vol. 1.] NOVEMBER, 1873. [Published Monthly.]

DIRECTIONS TO CORRESPONDENTS & QUERISTS.

1.—Write in a legible hand on one side of the paper only.

2.—Use no abbreviations which are not to appear in print.

3.—Keep every query distinct and separate, and give the fullest possible particulars, stating also the kind of hive used.

4.—When requiring an immediate reply, send a stamped ADDRESSED *envelope, or stamps for cost of telegram.*

The British Bee Journal.

NOVEMBER, 1873.

The large hive and super exhibited at the Manchester Show, to which reference was made in our last number, have provoked an immense amount of speculation as to the ways and means by which such results were obtained, and we quite agree with our correspondents that a full explanation should have been given at the time of exhibition or as soon after as a report could be made public. Our esteemed correspondent, Mr. Symington, has suggested means by which their achievement was possible, and from a report which we have received from an exhibitor at the show, there can be little doubt but that some modifications of the means so suggested were employed. Mr. Pettigrew, however, in a letter to the *Journal of Horticulture* says, "The hive weighed 108 pounds, and the smallest glass super 26 pounds; both were filled by my first swarm, obtained on the 21st of May," and this assertion we are bound to accept, although, at the same time, we cannot overcome a desire to know how the swarm was "obtained."

We are thoroughly convinced that neither of the *wonders* in question was the natural outcome of the season, and regret that, on the face of the report concerning them, they are made to appear as if they were. The ambiguity in the rules gave opportunities for the exercise of skill in bee keeping, and we have no right to complain that exhibitors did their best within the letter of the rules to obtain the desired results. As instances, in class A the prizes were "for the heaviest and best hives filled by swarms of 1873," the rule did not say how many swarms might be put together, nor did it say whether they were to be obtained naturally or artificially, but as Mr. Pettigrew's hive and super were filled by his first swarm, we imagine it must have been a large swarm artifically formed, by uniting the population of several hives in one.

The large super was in class D, in which prizes were offered "for the best glass super of honey comb, the produce of 1873," there were no stipulations as to how they were to be filled, whether by one swarm or many, and it was, therefore, quite open to every intending exhibitor to use the best means in his power for its production. In class F the prizes were offered "for the best miscellaneous collection" of hives, supers, and bee furniture, there was no stipulation as to the articles exhibited being the property of the exhibitor, and consequently intending exhibitors were at liberty to increase their "collection" by borrowing of their friends and neighbours.

We sincerely hope that in all future exhibitions such errors will be carefully guarded against, for instead of promoting an honest spirit of friendly rivalry, and thereby increasing the aspirations and energies of bee keepers, and advancing the science of

bee culture, they lead to chicanery and mistrust, and effect no good or useful purpose whatever.

The proposal, in our last, for a meeting of bee keepers at the Crystal Palace, appears to be favourably received, and it is hoped that an exhibition of hives and bee gear may be arranged to take place at the same time, in accordance with the spirit of the suggestion of our earnest correspondent, H. W. T., in his proposition for the formation of a Bee Guild.

We think such a meeting might be arranged to take place in early spring, and have little doubt but that it would be largely patronized, as in addition to the usual attractions of the Palace, the opportunity for viewing such a collection of bee furniture as might be then got together, would, we are assured, be eagerly embraced by all bee keepers.

At the same time arrangements might be made for the establishment of a honey fair to be held in autumn, when "London" would been abled to purchase genuine honey at a fair price. We say genuine honey, because we should like to see a system adopted by which the honey sent to the fair could be judged by *experts in tasting*, and its order of merit certified, and its value assigned.

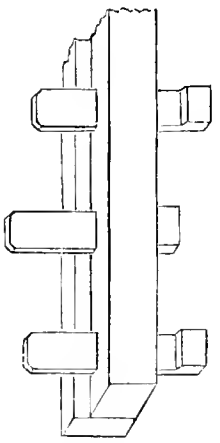
This mode is adopted in the butter markets of Ireland, where all shades of quality are determined by the judges, who inscribe its order of merit on the casks, such inscription being a safe guarantee of its quality. We see no reason why some such system should not be adopted with honey, which would then be brought into competition with butter at the breakfast or tea table, and we are quite sure the public would be largely the gainers both in health and pocket if they would use it in preference to what is often a mysterious greasy compound with a very indifferent character.

HIVES.

—o—

We have been favoured by Mr. Lee, of Windlesham, by Bagshot, the Silver Medallist for hives at the Manchester exhibition of 1873, with a specimen top rail. such as he proposes to use for the backs and fronts of his Woodbury and other bar frame hives, such hives being formed of skeleton wooden framing, filled in with straw work. This rail differs from those formerly used inasmuch as the blocks which separate and keep the frames in their places as they rest in the notched rabbets at the back and front of the hives, are moveable, whereas in those hitherto used the notches were cut out of the rabbet, and the blocks were solid portions of the rail itself. The new contrivance is certainly a great improvement, and in use, with care, may be made to overcome much that is objectionable in the present arrangement of the bar frame hive, and provided it does not add to its cost, will doubtless be largely used.

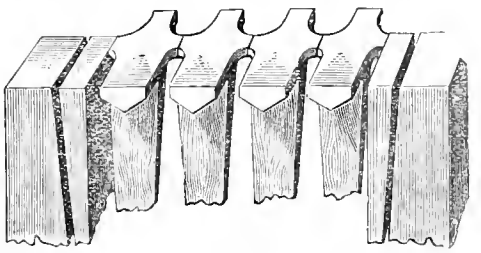
In Mr. Lees' improved rabbeted rail the distance blocks are made to slide in from the outside, as will be best understood by reference to our engraving, which is intended to shew the blocks in various positions, by which it will be at once understood that having been placed in position until the hive has been closed, they may be withdrawn sufficiently to prevent propolizing, and the evils attendant thereon, yet will be always available as a means of securing the frames in their correct positions in the hive in case of its intended removal.



This arrangement does not dispense with the bottom rack and rail, nor does it contemplate the abolition of the rabbets and the spaces above the frames. We give it, however, the prominence it deserves, and have little doubt but that its description will be interesting to our readers.

Continuing then the description of the proposed hive, which we think will contain few disagreeable features, we here present an illustration showing the upper portions of its sides and frames, in transverse sections (and perspective) from which may be in some measure gathered the means of its manipulation. Want of space has compelled us to contract it to the exhibition four frames only, but we trust they will be sufficient for the purpose. As will be seen the side walls of the hive are in two parts as suggested by our "Sevenoaks" correspondent (see page 70) the inner portions of which, being wedge-shaped, are capable of easy removal, this at once affording facilities for late-

ral movement of the frames toward either side of the hive, and avoiding the necessity for crowding several of the frames together, to enable the operator to extract any one of them. This we feel will be of the greatest possible service to all (bar frame) bee keepers and to use the expression of a practical hive maker "it's bound to be adopted."



Who as an amateur, has not felt the inconvenience of the present arrangement, when it has been necessary to make an examination of the Woodbury hive?

The removal of the crown board generally causes the displacement of several of the frames, due to the fact that the bees will persist in filling the space above them with honey comb, thereby attaching them to the crown board so firmly, that the latter cannot be lifted without raising them out of their notches, nor can it be wrenched sideways in its own horizontal plane without converting the waxen attachments into a series of harrows which are liable to injure the inhabitants of the hive. And when the crown board has been removed, what a picture presents itself? The honey cells having been broken, the crown board and the upper side of the top bars of the frames, present corresponding series of broken and bleeding comb, to which the bees, not only of the hive operated on, but others also from neighbouring hives, attracted by the odour of it take immediate possession, while the amateur operater, fearing lest he may have done something dreadfully wrong, is in a disagreeable dilemma; he is afraid to proceed because of the immense number of bees congregated on the tops of the frames, and any attempt to replace the crown board he knows will crush some hundreds of them, for while he has been hesitating, they have been making free with its bleeding honey surfaces and have congregated thereon by thousands.

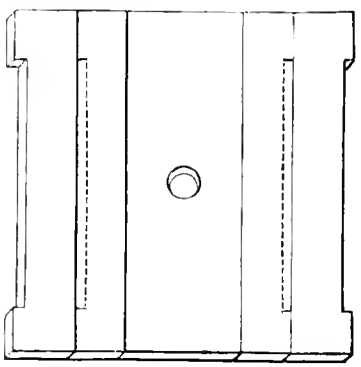
But taking another view of the case we will suppose (what is most improbable) that no comb has been built between the frames and the crown board, and that the latter has been moved without disturbing the former, breaking a single cell, or causing any extraordinary excitement among the bees. How, even with everything so far in the most favourable condition is an amateur to extract a frame of comb? and if he gets it out, what is he to do with it? It is usual to prize some of the frames out of the notches in which they rest, and crowd them together until sufficient space is gained to allow of one of them being taken out. Now this, which seems so simple a matter to read of, is often attended with great danger to the queen and bees, beside creating undue disturbance in the hive, and as it is almost always necessary to place the first comb extracted on the ground or in some receptacle outside the hive, while the other frames are being examined there is often danger of chilling brood and bees, and attracting robber bees to the exposed honey in the combs, and as a rule, the comb first removed is kept out of the hive until all others have been examined, when it is as troublesome and dangerous to return it to its original position, as it was to extract it therefrom.

The moveable portions of the sides of the proposed hive being thinner at the bottom than at the top, it will be immediately evident that as they are withdrawn, they will retire from the frames and comb, and so prevent all danger of injury to either the comb or the bees, and their removal will afford so much lateral space that there will not only be no occasion for crowding the combs together, as before described, but each comb, after examination may be immediately returned to the hive, and the possibility of chilled bees and brood will thus be prevented.

The next but not the least, important part of a hive is its cover, crown, or honey board as it is variously called. In the Woodbury hive it is formed of wood, or a combination of wood and straw, and is usually about an inch in thickness. If of wood it is clamped at the ends to prevent warping, and is generally made in one piece, so that in any operation be it ever so minute or simple, connected with any portion of the interior of the hive, it is necessary to remove the whole of it. This we have long considered such an objectionable feature, that in all our own hives we have abandoned it, and our covers or crown boards are simply strips of wood laid side by side, and held down by transverse pieces fastened across them. In the Stewarton hive no crown board is used, but the interstices are filled up with slips, which fit into grooves, formed in the sides of the frames, and thus make an even surface on which supers or honey boxes may be placed without the intervention of any board whatever. These slips (or slides) are liable to one very unfortunate inconvenience, they are sometimes so glued on with propolis, as to necessitate the application

of outside heat to render them moveable, and this is in our opinion so objectionable as to be inimical to their adoption.

Our American cousin "Novice" stoutly maintains the opinion, and practically proves that the use of the crown board is a mistake, and recommends (and uses) a coverlet of some woven fabric, such as carpet, holland or forfar, as being more handy in use, and better as a means of affording ventilation than any other kind of cover. His quilts, for so they are called by him, are laid close to the tops of the frames; they are not sufficiently heavy to crush the bees, even if laid directly on them, and they mould themselves to any possible condition. A piece of stick laid across the frames, under the quilt ensures a means by which the bees may travel over the frames, if such a passage be thought desirable, and the quilt may be lifted for examination at any time, and replaced, before the bees have time to recover from their first surprise, and not a bee need be crushed or even injured. We are strongly in favour of their adoption, but not having tried them, we cannot speak from actual experience of their value, yet as we have every confidence in our American friend, we intend giving them a severe trial, both during the present winter, (as a means of ventilation) and in the ensuing spring and summer.



Pending our experiments we must call attention to an excellent arrangement (proposed by our scientific correspondent, Mr. F. Cheshire) by which the crown board may be made to do duty not only as a crown board and adapting board beneath the supers, but which will also afford ready means for almost perfect ventilation. Our engraving will show almost at a glance the simplicity and worth of the arrangement. The "board" is in pieces the central piece being of extra width to permit of a feeding hole, any number of pieces may be used, but to exhibit its chief features we have made it in five only. It will be seen that the two outside pieces have narrow slips chased out of their sides, which, when the hive is *closed* rest on its outer walls, but which when required either to furnish means of ingress to supers, or for ventilating purposes, may be so disposed as to come on to or over almost any part of the combs, and in any position either parallel with, or at right angles to them.

WHAT TO DO, AND WHEN AND HOW TO DO IT.

In deference to the wish of a valued correspondent we have elsewhere in the Journal given a sketch and description of an excellent mode of packing bees in straw skeps, so that they shall be effectually protected against the evils of our changeable climate. There are, however, many other means by which bees in skeps may be protected, although, arguing from the platform of the straw hivists, they ought to require no protection at all, save a roof to keep them dry. Dryness is one of the first essentials and a good roof is, therefore, of the first importance, yet how often do we find hives destitute of even that? We have seen hundreds of hives, left for the winter with no other protection than a handful of heather, or a tuft of peat on their crowns, kept in their places by an old pantile, a brick, or piece of stone, their sides fully exposed during the whole season to all the inclemencies of the weather, so that often they become soddened with rain or snow, and frozen with ensuing frost, without the slightest further attempt being made to protect them.

Hives thus uncared for soon go to decay and collapse through their own weight, and that of the material piled upon them. In how many instances also do we see rows of bee hives standing on planks or stands, with nothing to prevent the rain or snow soaking the lower parts of them, and causing them to become the habitations of worms, slugs and other vermin?

Surely it cannot be wonderful that bees so managed do not yield a proper return, and in fact are accounted of so little value that many persons will not take the trouble to keep them at all.

One of the best if not the best cover or roof for a straw skep is a milk pan if properly applied. Many persons who use them place them over the skeps without thought or care for the consequences, quite satisfied with having sufficiently protected their bees from rain and other outside moisture, but forgetting that moisture in the form of vapour is continually rising through the hive, and condensing into water on the under side of the pan, which gradually soaking into the crown, soddens it until it becomes so cold that the

vapour cannot escape through the crown, but condenses inside the hive, to the great discomforture of the bees. Straw is undoubtedly a good non-conductor of heat, but to remain so it must be kept dry. A straw hive, when once soddened with moisture, no matter whence obtained, is not an easy thing to render dry again, when in possession of a stock of bees, for they will be continually generating moisture which will condense on the inside of it, robbing the internal atmosphere of its heat, and necessitating continued effort on the part of the bees and increased consumption of stores, to maintain the degree of heat necessary in the hive.

To keep a skep dry, the roof or cover should extend so far all round it as to protect the whole of its floor board from the driving rains, or some interposing material should be made use of. An American cheese box, as recommended by the late Mr. Pagden, is an excellent outside case for a skep, as it may be completely covered by a milk pan, and is a safe protection from the rains, &c., and when stuffed inside with hay, straw, or saw dust, will afford capital protection against the vicissitudes of the temperature. In all cases, however, a large handful of hay or straw, or a pad of carpeting should intervene between the hive and the milk pan, to permit of the escape of the moist vapour from the hive without condensation immediately in connection with it. This vapour might be allowed to escape in a perfectly harmless way if the pan were kept from close contact with the material between it and the hive, by means of a bit of old basket work, a handful of light brushwood, or some similar appliance which would permit the vapour to pass off in a lateral direction. The old straw hackle must not be forgotten as a good temporary means of shelter. It is easy to make and apply, but if often removed soon becomes ragged and ineffective. It is only necessary to tie a bundle of straight straws firmly by one end, wet the whole until it becomes tough and pliant, open it like an umbrella, and slip it over the hive. Then, when evenly arranged, a hoop or string should be put round it near the bottom of the hive, and the ragged ends of the straw clipped off. This is a favourite cover with many bee keepers, but our objection to it is that it so soon becomes useless.

Next to outer protection, ventilation claims most careful attention. It is with bees as with flame, neither can exist without air, yet too great a supply of it may destroy both.

We are continually being asked "How much ventilation ought my bees to have?" a question we are entirely unable to answer, because the necessities of each stock depend so much on its strength and condition and the kind and size of hive in. Mr. Cheshire's letter in last months journal, very plainly shows why ventilation is necessary, but no one can lay down a rule for each individual hive. The straw skep when dry requires as little ventilation as any hive, not as many people suppose, because it permits of ventilation through its walls or crown, for that is impossible, seeing that the bees render it impervious on the inside by varnishing it all over with propolis, but from the fact that the heat is retained between the combs, instead of being allowed to ascend and dissipate itself over the crown as in the present bar frame hive, where space is allowed above the frames all over the hive. The consequence is, that the heated saturated air finds its way to the cold parts of the hive, and condensing, renders the hive still colder than before, and it eventually becomes wet and mouldy.

The bees would stop up the space above the frames, if allowed to do so, but the bee keeper will not permit this and removes all attachments above the frames, because they impede his manipulation. The Americans as we have elsewhere remarked, in our replies to querists, have in many instances, dispensed with the crown board of the hive, when wintering, and have adopted quilts of carpet, &c., over which they pile other porous material. Some such provision should certainly be made to permit the escape of the vapour, without creating a draught through the hive, and we must leave our readers to decide which is the best and most easily available in each particular case. A flower pot stuffed with hay, an empty super in which the saturated air might condense, a straw skep filled with straw or shavings, or anything of the kind placed over the central openings; or where a slotted honey board is used, carpet, felt, or India matting, surmounted by some porous substance, such as hay or shavings would answer well.

We cannot help reminding our readers that in consequence of the late fine weather, the bees have consumed stores largely, and will probably require to be fed with barley sugar, to make which it is only necessary to put three pounds of best loaf sugar into half a pint of boiling water, when dissolved add half a wine glass of vinegar, and continue to boil and stir it for nearly half an hour, or until by removing the spoon and trying a few drops on a cold slab its crispness is determined. Take care to have a clear even

fire, and do not let it boil over, or it will burn most fiercely. With a little care, however, there is not the slightest danger. When sufficiently cool to permit of its being safely placed in bottles or tumblers pour it in and fix a stick upright in the centre of each, to stand out about two inches, so that when inverted on the top of a hive, the stick may reach down to the combs, and afford a means by which the bees may reach the barley sugar, as otherwise they may starve with it in sight, through being unable to climb up the cold polished glass.

Do not forget to destroy all vermin, wasps and spiders, and the chrysalides of the wax moth in particular.

DEATH OF W. A. MUNN, ESQ.

With the deepest regret we record the death of W. A. Munn, Esq., F.R.H.S., the original Inventor of the Bar and Frame Hive, who expired at his residence, Churchill House, Dover, on the 13th ultimo, aged 63 years.

Correspondence.

BEES IN A LAND OF SUMMER AND SUNSHINE.

To the Editor of the BRITISH BEE JOURNAL

Mr J. Carroll was my nearest neighbour bee keeper, and he went out in the autumn of 1869 to Brisbane, Queensland, Australia, and took his bees with him to make a living. He writes in "Novice's gleanings in Bee Culture:" "This is a splendid country for bees. No wintering here, the bees are on the wing all the year round. The bee is most certainly a native of the tropics. My observatory hives are three feet square; containing only a single card of comb. I simply put a bar across the large frame to support the comb. The hive opens on each side. I raise hundreds of queens in them. The bees are never taken out, as the winter, if it can be called winter, is not severe enough to kill bees, even in a single comb glass hive. We can raise queens, and have them fertilized at any time during the year."

Do you want to know what I think of your new hive? Well, I have had timber cut for 200 of them, and intend to give it the following name: "Novice's Hive of Hives." He signs himself "Bee Master to His Excellency the Marquis of Normandy."

WILLIAM CARR,

Newton Heath, near Manchester.

EXPERIENCE.

Sir,—I had a swarm from a hive of very pretty Ligurian bees, but the naughty jade of a princess left in the stock, only unworthily followed her mother, for upon her flight she met an ugly black drone, and listened to his cooing. I know she did, although the evidence was only circumstantial, for in due course the rather inky daughters of the sooty father showed themselves at the hive door. Now, being a true fancier, Mr. Editor, could I be expected to endure mongrels? Having possessed myself of a pure queen from Italy, that I felt convinced was a very pattern of propriety, (before I opened the box in which she had taken her long journey) I proceeded upon the serious business of introduction. The box lid was cautiously opened, when, alas, for the fate of misplaced confidence! away flew the queen, and settled on a wide board about three feet from the box, but instantly she was on the wing again, rising and flying from me until lost to sight. I gave up the light and blithesome dame for lost, but still kept looking about in the direction of her flight, hoping her accompanying daughters might yet get scent of her. In somewhat more than half an hour the search was given up; and leaving the box close to the spot from which the queen had flown, I went to breakfast bemoaning my loss. The time of my usual train was drawing near, but, while preparing to start, I concluded it would be wise to again visit the scene of disaster; when, on the board, and upon the very spot from which the lady had flown, there was a cluster of bees, and a closer inspection revealed her in their midst. A glass was popped over all, zinc placed beneath, and in the greenhouse, with every window closed, behold me with the cage in hand, lifting the glass with the other, but as it rises she is in an instant buzzing and flying around my head. Not for a few minutes did she settle, but now I had her, and settled her destiny, for in a short time she was fixed upon a comb in her new domicile. Now, Mr. Editor, why was the queen so light of heart, and did she do only what might have been anticipated in returning to the spot from which she rose? She certainly made no examination of the place when she started, as I traced her clearly some considerable distance flying from me in almost a direct line. We expect you to know as much about matters like this as though you had been a bee when time was young, which by metempsychosis, had very properly been converted into the editor of our most excellent journal.

A. H. A.

It may be safely inferred that when a queen takes flight under any circumstances (except on swarming) she will always return to the spot from which she started, and will alight there if permitted to do so. We lost one a very short time ago under similar circumstances to those described by our correspondent, but her return was prevented by her becoming entangled in a large spiders web. Some bees found her in her singular position, and encased her, and when we discovered her she was dead. We mention this, as it may aid in explaining why young queens are so often lost on their wedding flights. ED.

ON UNITING QUEENS.

DEAR SIR,—In a correspondence with the late Mr. Woodbury shortly before his decease, I had occasion to ask his advice as to the best method of uniting Italian queens to common stocks in the ordinary cottage or fixed comb hive.

He recommended driving, but as I had never succeeded in performing the operation to my own satisfaction, I hesitated to adopt this plan on so large a scale as the introduction of six imported queens required.

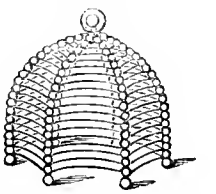
To my enquiries as to his experience with regard to fumigation, he (Mr. Woodbury) replied that he had no knowledge of it, nor did he know any case in which it had been tried. Having a sufficient stock of well-dried puff-ball, collected from the meadows the previous year, I determined to experiment on three common straw skeps and three Stewarton Hives.

The queens arrived on the 5th November, 1870, frost having set in. Removing each hive into a warm room, I placed an empty Stewarton box reversed, under the boxes containing the bees, and when the hum proclaimed the excitement of the colony, by means of one of Mr. Neighbour's fumigators, fixed on bellows, I injected sufficient smoke from the ignited puff-ball to stupify the bees, tapping the hives during the operation, until perfect silence reigned within.

The manipulation of each hive occupied about three minutes, and on raising the upper boxes I discovered the bees in a comatose state in the lower box, and in every case the black queen, lying uppermost, was easily distinguishable, and was reserved with a few of her subjects, in case of accident. The Ligurian queen, with her attendants, was immediately placed in the midst of the stupefied bees in the lower box, these latter being piled over her, and the upper boxes replaced, slightly wedged up to admit air but not sufficiently so to allow the bees to escape, and the hive was again returned to its stand. The same method was adopted with each hive in succession, with this difference only, that under the cottage straw hives, a similar hive, excepting fittings, was placed. The operation on the six hives occupied about a couple of hours, and in every case was perfectly successful, the bees on recovering from their sleep, ascending to their former domicile in half an hour at most after stupefaction. On the 3rd of December, a bright and spring-like day, I had the extreme satisfaction of seeing beautifully marked ligurians sunning themselves at the entrances of all the hives, or hovering around in no small numbers. These stocks continued to do well during the following summer, throwing numerous swarms of the purest Ligurian type, and working supers.

The stupefying process appeared to me to act most beneficially and to arouse the energy of the bees, for throughout the winter, on fine days, pollen was carried into the hives, and very early breeding commenced in spring.

For introducing queens into bar frame hives, I would recommend the wire pipe cover, so called, of which I send you a rough sketch. They were supplied to me by Mr. Woodbury at 2s. per dozen, made of fine wire, and very simple in construction.



The queen is imprisoned under one of these cages upon a brood comb, near the centre of the hive, the lower edge of the cage being pushed sufficiently far into the comb to secure it, the English queen having been removed 24 hours previously. After 30 hours confinement the prisoner may be released, with every prospect of success. This cage is far preferable to the one of perforated zinc, sliding on the upper bar of an empty frame, in which I have lost several queens, apparently from cold, the bees not caring to cluster around them, when in the upper part of the hive, so far away from the brood.

GEORGE RAYNOR.

Hazeleigh Rectory.

POSTHUMOUS.

SIR,—In your leading article of October you very properly comment on the Manchester "bee furniture" show by quoting Mrs. Tupper's saying, "Bees do

nothing invariably" (except store honey in straw hives adds Mr. Pettigrew.) And again, on page 82 you give a grand summary of Mr. Llangstroth's 61 essentials to perfect the idea of a good useful wooden hive. Experience, however, comes to the rescue in bee keeping, and will suggest that an old hat is as complete a hive as the skull or carcass of the lion was for the Honey harvest Samson gathered as he returned from Timnath. I think, however, the riddle should be now solved, how the wooden hive or box is better than the straw or any other hive, where perfect management and economy of time can be taken into consideration?

Straw then may be discarded as obsolete in hive building of any kind, for although cheap to buy, the expenses of bee houses or sheds, with floor boards and stands, with the drawbacks of their decay and the shelter they afford for vermin, condemn it. The only thing to regret is that the late lamented Rev. Thomas, when reviewing bee books in the Quarterly, observed, "write me down a Hivite, if I forget the little wood cut at the head of Watts's hymn 'How doth the little busy bee,' and so we may miss the straw hive or straw cap in the cottagers garden." I, however, beg to propose a compromise, which is, to have the cottage hive to stand on the boxes containing the bar-and-frame plan of honey gathering. I fully believe this will be the only way to completely introduce the great advantages of the framed box hive. With this view I sent some hives and bees to the Manchester Show, (alluded to at page 85,) but the rules and regulations seem to have restricted the prizes to honey only, which the judges were to taste, and which must have been of superior quality, as one of them, the Rev. W. C. Cotton, gave £10 for the honey on the spot, after tasting some of the 87 pounds produced in a super! Seeing that the average of the honey produced in a cottagers hive weighs only 25 or 30 pounds when taken with the stock, it certainly would have been of advantage to the bee keeping world if some little report had been permitted at the show, when, where, and how these bees of Arnwick, Manchester, collected this enormous weight, and built their combs to hold this very superior flavoured honey. I make these observations as you have done in the *British Bee Journal* in no captious spirit, and join in your conclusion, "We do not really understand such phenomena."

Turning then to the practical remarks of your "Renfrewshire Bee Keeper," who has so shortly and ably described the mode of transporting the octagon hives on board the Clyde Steamer, I think every unprejudiced bee keeper must see what extra trouble and care these hives required in packing for their journey, whilst it must be confessed the manner in which he honestly states the mode of transferring common straw hives for his own apiaries, *i.e.*, carried inverted, with a pretty open cheese cloth tied over, will at once prove that hives in sections, on flat floors and closed against the removal of honey, must labour under great difficulties. Two objections, certainly, I know of, from experience in transporting these common straw hives only short distances, viz., first, if the hive be inverted as stated, all the honey in open cells for daily use (unsealed as they are in the summer and early autumn) must run out and smear the interior, and secondly, if the combs are the build of the early swarms, being new, they will drop into the cloth when carried on the floor board; and I may add that if kept for more than a day or two the imprisoned bees will cut open the cloth. It is evident then that we require a hive or box that will enable bee keepers to transport their bees with facility and safety, and interfere as little as possible with the combs, honey, and bees, and yet give them thorough ventilation and food when required for long journeys. Can any one name such a hive. I trust "Lanarkshire Bee Keeper" or "Stewarton Apiarian" will shortly give us such a hive. I turn now to escape from the blame of not noticing the priority of Geddie's patent, named by your excellent correspondent in the *British Bee Journal*, and I shield myself behind Wildman's hive, as I have now come to the end of my promised information regarding the mystery of bee management by Wildman, which ends in smoke, the mahogany box, and manipulation.

Still I trust I may be pardoned my silence, as in the third edition of Dr. Bevan's Honey Bee, page 308, John Geddie is fully honoured as obtaining his patent in 1675, from King Charles II. (not James II.) whereas Thomas Wildman only comes before us as a bee master in 1766, whose talent in holding the instincts of the bees under command, made me seek the kind of hive he used, to arrive at this knowledge; as I stated in the October number. I must call the attention of your readers to that very able article on "Ventilation" by F. Cheshire, and let us all keep in mind his concluding sentence. "Give ample ventilation, and allow as little heat as possible to escape through the walls of the hive," the one great principle that has been so imperfectly understood in our wooden boxes or cases for the bar and framed hives, and has thus far

induced many to adopt the old-fashioned straw instead of wood, but which I had pointed out when writing on the bar and frame hives, in 1843, more then as an experimental hive than as the common hive of a cheaper construction. But do not let us confuse the "Ventilation" of poor Mr. Nutt's plan with that summed up in this letter.

I think Renfrewshire is rather hard on Mr. Carr to ante date the "Reformation" even for an inventor of hives. Perhaps Mr. C. W. Smith will prove that there is only the difference in spelling between the "Kerr-Stewarton" and the "Carr-Stewarton" and unless the contracts made to supply the hive in two qualities, should destroy the delusion we may be all labouring under, I must conclude with the fact that I claim the ribs of the lion as giving me the first idea of a bar and frame, whilst I know Mr. Pettigrew will not allow it is worth a "straw." Let us all then try and extract all the good we can from the various hives suggested, and guided by the impartial reviews of Our Bee Master Editor, let us remember that bee stings are all cured by a little blue bag, if we should take to it, and that our lives are not forfeited by any stings we may give, as our pens are not barbed with poison.

W. AUGUSTUS MUNN.

MY FIRST FRAME HIVE AND ITS PROGRESSION.

In order to give the reader an idea of what prompted me to adopt the frame hive, it will be necessary to go back to the commencement of my bee keeping. My desire and love for bees commenced when a mere child. I remember being taken to the bedside of my father, to receive from his lips the instructions and injunctions a father only can give, and from his hand a tea spoonful of honey. While the former were the less appreciated at the time, they have perhaps been the more lasting, yet the taste of the honey (in those days honey was scarcer than now, 15s. per pint being readily obtained) with the story of Samson and the lion, together with wonderful stories of the king and queen, workers and drones, created in me a strong desire to have bees for myself. Previous to becoming the possessor of a hive I had had a little experience in the rustic style of manipulation with them, in straw hives, and my ear was not deaf to the perplexities of bee keepers. As to the superiority of the Stewarton supers to their own, the belief was that their production was a secret, without a knowledge of which there could be no success. Through this belief (railway accomodation was not so easy then) they never attempted the journey to Stewarton, but if they had they would have been gratified to know otherwise. Numerous plans were tried, and although many were failures, yet I think I profited by them.

My first hive then was a large straw one with a six to eight inch hole in the centre, with cross sticks to support the combs, and a hole for the entrance about three inches wide and three quarters high. My first object was to try and get a swarm, as is the case with most young bee keepers, and in this I was successful, although late, and the only honey I got that year was in turning out the old stock. In doing this I was so disgusted with the fixed deep combs and cross sticks, and the great difficulty I had in getting them out of the hive, without breaking the combs, and smearing everything near me with honey, that I was prompted to try some other plan, but here was a barrier. I was told distinctly by Carluke people that bees would not live in wooden hives. Besides I had already purchased a number of the other hives, so this with a light purse caused me to content myself for a while. The next grievance I had was the large hole in the centre. When supers were put on and taken off, in the former the largest combs lost their support when the lid was removed, and invariably the bees commenced building their combs upwards, the queen often following and depositing her eggs. This and the vitiated air naturally rising to the top gave anything but satisfactory combs. In the latter case, ere the super could be removed, the whole of the combs had to be cut through, often setting the bees fighting. The honey dripping from the super was also a nuisance, and in cases where supers were not finished the whole of the comb detaching itself would fall out on to the hive.

But how to remedy all this was the poser. Believing as some of our would-be great bee masters still do, that wood was obnoxious to bees, and having no experienced bee keeper better enlightened, nor bee books of any kind to inform me, I had a good deal of planning, and although some of my inventions were rustic enough, they gave me better satisfaction.

My first improvement was with an old straw flat topped hive, the top of which had fallen in through the weight of combs it had from time to time to carry. This was simply a straw cylinder. After straightening the top edge and fastening to it a few pieces of wood to receive screw nails from a wooden cover, in which a few three quarter holes had been bored for admission to the

super, I screwed the cover to the top of the hive, and as a support to the combs in lieu of the cross sticks, I placed several laths about one and half inches broad right along within three eights of an inch of the bottom edge of the hive, supported by little blocks at equal distances, so that the bees might have a free passage through. Having now my hive finished and stocked, I had not long to wait for favourable results, getting both hive and super filled with honey in a very short time. On removing the super I was highly delighted to find not a single comb attached to the crown of the hive. This I considered a great improvement on the old fashion with the wide hole. My next manipulation was the turning out of the hive itself. After I had removed the cross laths and bees, I loosened the combs from the side of the hive, and unscrewing the crown board, I lifted the whole of the combs *en masse* adhering thereto.

This was considered a great achievement, getting the combs whole and clean, without as usual, smearing everything with dripping honey. Being so well pleased with the new form of hive, I ordered a quantity of straw cylinders, but in this I was disappointed, as the maker failed to supply me, and through this disappointment I was compelled to make some wooden boxes. These boxes were eighteen inches square and nine deep, with the crowns all made to screw off and on. These, however, in consequence of their size, and being in a bad honey district, did not give me satisfaction, they were too large in bad seasons, and seeing the propriety of having hives that could be made large or small at pleasure, I cut my boxes in two and made a quantity more, to be used as nadirs, as I found the first mentioned size too small, when sent to the heather. (In another letter I will describe how I ventilated my bees in transit). This last improvement was the thing that suggested to me the possibility and advantage of having moveable single combs, as the crowns being made moveable I could transfer them to any box. Owing to this alteration I was compelled to have passages for the bees in the under boxes, and as I always had a desire to have straight combs, I generally used a guide, so that crooked combs were never in my apiary.

The crown boards in my under boxes were all lined off to the proper distances, having a half inch passage between all its combs to within one and a half inches at the ends. Owing to the shallowness of these boxes, the combs required no support, and when removing the combs, I had only to detach them with a knife back and front, lifting the whole out attached to the crown board, as in the case with the straw hive. While manipulating with these boxes (which were doubtless the Stewarton system, but with square boxes) I saw how I might be able to lift out combs singly, and do away with the cutting at the end of the combs.

I then made a hive consisting of two boxes, seven in. deep and only fourteen square, all inside measure. The tops of the frames were made to fit close to each other on the top, and had a projection all round of half an inch. The end pieces were fitted to lie close to the front and back of hive, and had no under support. the combs being supported by broad laths, as in the straw hives, the two outside frames being broader owing to the projection. I had a mortice cut in these, the outside being in a line with the inside of the hive, for the purpose of admitting bees to the super, and from one box to the other.

My hive finished and filled by the bees, I was in ecstasies in being able, as I thought, to draw up any comb I chose, and in shewing to an acquaintance how I could lift out the combs at will, I was rather chagrined when I completely failed, the combs being partly fastened one to the other. I had one consolation, however, my acquaintance was a sensible man, and had been thinking of something of the kind himself, so he did not laugh at me, but rather tried to help me out of my difficulties, and as two heads are better than one, we consulted as doctors do, and made an improvement in having one of the ends of my hive moveable, sliding in and out by a simple contrivance, and so gave me room to extract the first comb. After that the rest were easy, and many a person did I astonish with my frame hives. Since that a quarter of a century has rolled on, and although they had a rough appearance compared to the Woodbury hive with the compound frame, I still look upon my old frames as a great achievement. I cling to them with tenacity, preserving their original form as near as I can. It is true I have them larger, with a rack ttached to back and front of the hive to guide the frames, and although there are alterations in the floor board, and a contrivance to keep the loose bar in its place, it is nevertheless the Woodbury hive. But perhaps the greater difference is in the crown board, which is exactly what your correspondent, " T. Burstall " enquires for, viz., to have the crown boards as in the Stewarton hive. I have many forms of crown boards, but perhaps the most simple is the one which I shall describe :—1st, procure two pieces of wood, the lengths from side to side of hive, 1¼ inches

broad, ⅜ thick, bevel the inner edges of the two, forming as it were, a half dovetail to receive the ends of the bar, which will be cut to fit, and which should be 1⅛ broad, by ⅜ thick with grooves for slides. There is a broad piece in the centre, which has a hole two inches in diameter, bored fully half way down. The underside has a hole 1½ inches, so that a rest for a piece of perforated zinc is gained: this is for the feeding bottle. This with the bars, is screwed to the thin pieces mentioned with half inch screws at the proper distances to receive the slides. The only thing to be very careful about is this, if a dividing board be used the cross pieces must extend over to clear the inside of the hive, to allow the dividing board freedom, and to shut off all communication from the other part of the hive.

A LANARKSHIRE BEE KEEPER.

EXPERIENCE.

On the principle of being better late then never, I will try to give you some of my experience in raising queens and driving bees in the hope that it may be useful to some of your readers. In my last letter I wished to know the best way of introducing queen cells containing young queens, in progress, which you replied to, but did not encourage me much as you thought the larvæ then left in the hive were too old for the bees to raise any more queens, but perhaps you did not understand that at the time of my writing (July 11th) the old queen was only taken away on the 8th and on the 11th I examined them again and found to my surprise in the old stock, about 15 young queens, in progress, on three combs. When I examined the black stock containing the Italian comb and queen cell introduced on the 10th of July, I found they had raised three or four more royal cells all in an advanced state, and having one other black stock at the time queenless, I introduced some comb containing royal cells from them. On the 22nd of July I examined all three hives and found that each had hatched a beautiful Italian queen for itself, which commenced laying on or about August 6th, at about fourteen days old. September 16th I examined them all, and found plenty of beautifully marked young bees, and brood in all stages.

I have driven about forty stocks of condemned bees for myself and neighbours this season, the last two on September 30th. I have made eight strong stocks out of about twenty, six in frame hives, and two in common straw skeps, and have given them about twenty four pounds syrup each. I have put two, three, and five together respectively. I find in fastening in the empty combs into the frames, fine copper wire the most convenient, and after driving the bees out of old skeps, the best way to get the honey out is by knocking it suddenly on an old tray or milk tin, when all the combs come down easily, if the sticks (if any) are first withdrawn, and any bees left in the combs may be brushed off into an empty hive and placed on old stands. I have found this plan far preferable to cutting out the combs and much quicker done, in fact, it does not matter whether the bees ascend or not, as when they are frightened by tapping the hive, they may be knocked out and brushed off as stated above.

I have made it a practice in every case to capture one queen out of every two driven stocks, and cage her up in top of hive in a wire cylinder cage until the evening. When the bees are taken home they may be knocked out into empty hives, sprinkled with syrup and united, when the queen of course left in cage on top of hive may be taken away. I have also found the best way of uniting queenless bees to any other stock is by opening the hole at top of hive and placing the queenless bees over them, when they will quietly descend. I have always found them united by the next morning without disturbing the stock hive.

Aug. 20th I exhibited my old stock of Ligurians, with young queen and brood in all stages, using for the purpose one of Pettitt's Observatory hives. They were exhibited at the Flower Show here (Melksham), and also at Trowbridge, and proved a source of great attraction, some of the remarks made upon them being very amusing, such as "Where's the king," ? then "What good are the drones, &c., &c.," showing the remarkable ignorance people have of the working of the bees they have in some cases been keeping all their lives.

A. A.

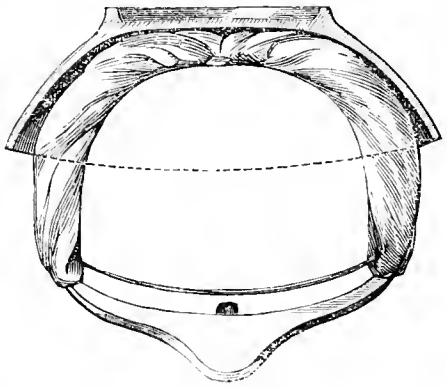
Melksham.

WINTER PROTECTION FOR SKEPS.

SIR,—I am exceedingly grateful for your prompt and lengthy reply to my queries. Your idea as to the protection of straw skeps for the winter appears to me most valuable, and I should think would prove of great service to many, who like myself, still possess these old fashioned hives, if you were to insert it with drawing in the journal. I shall certainly adopt it with mine. I am very pleased to see that honey slingers are now to be had in England, especially as you report so well of them.

C. E. F.

Our suggestion was to the following effect :—Having stopped the entrance hole (temporarily) slip a sack or bag without a bottom, down over the hive and stand, until nearly the whole of the hive is shewn through it, tie a string or cord round the sack, and round the hive, close down above the entrance hole ; then turn the sack upwards inside out as suggested in engraving, and fill all round with sawdust as high up its crown as the feeding hole. The remaining portion of the sack should then be folded over on to the feeding hole, and a milk pan placed over the whole. No special care is required in doing this, and there is no danger from the bees, as they will all be within the hive.



The sawdust padding will set close all round, and down to the floor board and the folds of the sack, will afford ample means of ventilation, yet will prevent the condensation of the vapour immediately on its leaving the hive, an evil generally too little regarded. A small arch of tin, zinc, or elder wood applied to the entrance hole will prevent its being closed by the padding, and a slanting piece of tin placed across about an inch from its end will prevent the bees being tempted out by the dazzling light of snow.—Ed.

A DRONE TRAP.

Sir,—I was very much pleased with and I hope I have profited, by your suggestion in the journal respecting the capture of drones by raising the hive three sixteenths of an inch to allow the worker bees to go in and out and placing a trap before the main entrance to retain them. I have made a trap for capturing them, and emptying supers, with a box receiver to retain the drones, and let the workers go free. The trap is made of a piece of wood about one inch thick, and four inches wide, and five or six inches long, with an aperture cut out of the wood about the size of the entrance to the hive, three eights high, and three inches wide. The end that goes into the box, is cut sloping, so that the little flaps or doors shall fall again with their own weight. The doors are made of thin horn, about a quarter inch wide, twelve in number and hung across the slope with a piece of wire. The box receiver is about eight inches square, and about three inches deep. The trap is let up into the box fair with the bottom, having a piece of tin or zinc to cover it. The trap projects out from behind the box about an inch. I have a glass cover to the box, so that I can slide it in and out, and leave an aperture between the edge of the glass and the front of the box, for the workers to escape and keep the drones behind. I have put on an alighting board across the front of the hive by boring two dowel holes in the floor board, and inserting two wire dowels in them, so that I can fix it on with the trap or take it off at pleasure. I put the trap on one of my hives on the 26th July about nine o'clock in the morning, and let it remain until about four o'clock. I then took it off, and took it in doors, and emptied the drones out into a pan of water, and counted them. I had captured 686. I put it on again the next day, and caught 451. I then put the trap on to my second hive, and captured the first day 700, and the second day 416. I continued to put it on for several days, and captured in one hive 1,654 and in the other 1,489. After placing the trap on one of the hives, and capturing 693 and 450, I thought I had taken all the drones, but I stood at the mouth of the hive one day about twelve o'clock, and saw several drones going in and out. I put on the trap, and let it stop about an hour, and when I went to the hive again, I found I had detained a swarm of drones outside. I put on my bee dress, and killed with the knife 240 in a few minutes. I continued to put on the trap for several days after, and caught in No. 1 hive about 1,500, and in No. 2 hive about 2,200 so you see that my queens have a good drone breeding propensity. I cannot account for the abundance of drones, as the one I fed the most had the least drones, and the one I fed the least had the most. You said when I wrote to you last about the drones, it was on account of liberal feeding that they were so plentiful. I put a super on No. 1 hive, and have taken it off again, with, I suppose as much honey as I ought to expect, about nine or ten pounds of splendid honey comb. I took it off, and placed it on a board and fixed the trap on the board and quickly cleared my super of the bees, but for several days after robber bees were flying about the hive a great deal, and they seemed to be in an agitated state, but now seem pretty quiet. The robbers had but very little chance,

as they were seized at the entrance, and what one could not do three or four or more would. When is the new hive likely to make its appearance? I am anxiously looking out for it. The metal corners I have no doubt would be an improvement. The ones you inserted in the August number I should think would answer every purpose, and are not so complicated as the others in the last number.

S. RICHARDS,

Cornwall.

PROFESSOR CHEVALLEY.

DEAR SIR,—Having been informed that one or two American Bee Journals have spoken in disparaging terms of Professor Chevalley, of Bellingzona, Tessin, I wish to say that he has during the past twelve months sent me at different times, stocks of Ligurian bees, and also packages of fine Ligurian queens and has honourably responded to my claims for occasional losses.

C. W. SMITH.

Totteridge, Herts.

THE MANCHESTER EXHIBITION.

DEAR SIR,—I take it that the object of all exhibitions, wherever held, or under whatever management, is to stimulate by competition, the advancement of the particular branch of industry each represents, and so long as the competition is fair and legitimate, that the outside public may learn how near perfection it is possible to bring the various products exhibited, by careful and attentive culture. Looking however, to the reports of the late show of flowers, fruit, and Apicultural produce held in Manchester in September last, I gather that compared with those who competed and exhibited them, as a bee keeper I am far behind, and judged by the same rule I fear that very many if not nearly all of your correspondents have still as much to learn as I, before we can hope to take a position as fairly competent Apiarians. On the surface it appears that there is no such neighbourhood for successful bee culture, as the vicinity of Manchester; there is no such system of management or hive to be managed as that of Mr. Pettigrew's, and that for skilful management there exists no one so competent as he, excepting in one particular, and that is in super filling, and here Mr. Breen bears off the palm.

Now, Mr. Editor, I ask you is this so? and I feel sure you will reply, No, sir, it cannot be. Why then have the general public been misled by the exhibition of (in at least two instances) results as genuine, which beekeepers believe are really not so? I allude, as you will imagine, to Mr. Breen's glass super of 87 pounds weight, and Mr. Pettigrew's hive and supers of 136 pounds nett. One report says 139 pounds.

I speak of these as calculated to mislead, because the impression created at the exhibition was that they were the product in each case of one hive of bees during 1873.

We all know perfectly well that even in a favourable season these results would be considered as very good indeed, but in a year like the present, the very worst for honey gathering that has been experienced for the past twelve years, they appear little short of marvellous, and require a great deal of explanation to be properly understood, but to simplify the matter and make it more intelligible to those who may be at present in the dark, I will explain how such a super as Mr. Breen's eighty seven pounder *might* be obtained even in a season like this. A bar frame hive should be selected to be operated upon (say a Woodbury) and the super so fixed upon it as to leave the side combs easily accessible. The hive should be filled with combs of ripe sealed brood from other hives, if necessary, and as fast as they become empty, replace them with others full of sealed ripe brood, again from other hives. By this means the hive would be constantly supplied with bees in countless numbers, and they having little or no brood to nurse would be able to turn their attention to the storing of honey and it is astounding how much would be collected by a hive so populated and with little brood to nurse to ripeness. On days when the bees could not venture abroad, just a little feeding would keep them going, and help them along nicely, and thirty or forty pounds *might* be given in this way without making a very perceptible difference in the quality of the honey, the more especially if glucose were administered. But how about the hives that had been deprived of their brood to assist in this plan of super making? Ah! Why *I should not exhibit them*, or call attention to them in any way.

This is one plan by which such a super *could* be built up for exhibition, and if Mr. Breen will kindly explain to us his *modus operandi* my word for it the principle will be the same, if the manner of working it out be different. As a skilful operator, I must give Mr. Breen his due share of praise, but why exhibit the result without appending an explanation?

Mr. Pettigrew would no doubt call this "clever

trickery," but wait a minute! How were his big hive and super filled? Not by one swarm of bees during the present season, of that I am tolerably certain, and yet he has no bar frames to exchange, as in the foregoing plan. How then could it have been managed?

Although not a disciple of the straw skep, still I think I should know how to go to work did I wish to build up a heavy hive and super, even with bees in that old-fashioned kind of domicile. I would select my largest and most active swarm, and that it should always be well supplied with honey gatherers, I would aid them from three or four other hives, by depriving them of their surplus population, which I would unite to my intended exhibition hive, and by aid of a little gentle feeding, as before-mentioned, I should not despair of having as heavy a hive for the show as the one which did *not* compete for Mr. Pettigrew. What if my three or four victims were at starvation point by the time "the pet" was ready for exhibition? Why it would be easy to build them up again in Autumn, especially in a locality where skeps are used, and condemned bees may be had almost for the asking.

I hope that in future exhibitions of the kind the regulations will be more stringent and the conditions more clearly defined than those drawn up for the guidance of exhibitors and competitors at the late show in Manchester. Mr. Breen was clearly and honestly entitled to his prize, because he competed in class D, "for the best glass super of honey comb *the produce of* 1873," not the produce of one hive or one swarm of bees in 1873, but exhibiting it without an explanation of how it was obtained, left the general public, who are very ignorant of what can be done by a skilful bee master, to draw the conclusion that it was the produce of one hive only. Class E was under the same conditions as class D, but class A was worded, as in my opinion, the others should also have been.

In Mr. Pettigrew's case, however, as he did not compete for a prize it appears to me that the hive was exhibited with the idea of impressing upon the public the superiority of the Pettigrew hive and system, and I cannot under the circumstances approve the motive of the exhibitor. Let us exhibit and compete by all means, but let us strenuously avoid sailing under false colours in so doing, and we may then hope that apicultural exhibitions will answer the purpose for which they are instituted.

R. SYMINGTON,

The Cottage, Oxenden.

Queries and Replies.

NOTICE.—*When queries on any subject are nearly synonymous, we only publish that which has required the fullest reply.*

QUERY No. 63.—On opening some of my hives I find the combs quite full of honey, not more than 20 cells in the whole hive empty. Do you advise me to empty them or leave them alone? I fear there will be no room for breeding, as the bees will not consume enough to make room before Christmas?

STAINES.

REPLY TO No. 63.—Your hives being in the condition you state the bees in them will be sure to perish during the winter from the fact of their being divided into sections by solid walls of honey which they will be quite unable to keep warm. We recommend you to sling out the honey from at least five of the centre combs, so as to give the bees room to pack themselves in the cells as well as between the combs, thus forming a dense mass and giving them a chance during the cold weather expected. ED.

QUERY No. 64.—Will you be so kind as to advise me in this misfortune. I have one very fine stock in a glass bar frame hive very strong of bees. I fed it late (unfortunately). I have it inside a room, the bees passing through a grooved piece of wood covered with glass, out of the window. A day or two ago I saw some bees come out and crawl along, as if suffering from dysentery. To-day many more have come out, and died in the same way. I covered this hive a month ago with a piece of blanket. There is plenty of ventilation, a strong current of air indeed passing through from the window. Having lost many stocks from dysentery in spite of all I could do, I am very anxious to try and save this hive, and as the disease is only beginning, perhaps you can kindly let me know if there are any means I can take to try and stop it? As the hive is in a room it is not easy to change the floor board; but 10 days since I did so, and there was not a dead bee on the board then. If you can help me to save my poor bees I shall be much obliged.

S.L.

Princes-road, Liverpool.

REPLY TO No. 64.—It is probable that the bees have stored large quantities of liquid food, and are unable to evaporate it. This condition of things has been brought about by late feeding, aided by the draught through the hive, the necessary consequence of having them fixed against the wall, or window sill of a dwelling room (see page 74, top of second column). If the grooved piece of wood had been covered with perforated zinc or wire work instead of with glass, the air whistling through the outside entrace would in a great degree have escaped into the room, instead of passing through the hive, and the bees then would probably have been enabled to keep up the heat necessary to enable them to throw off the watery portions of their food. Mr. Cheshire's letter of last month throws a great deal of light on the subject of moisture in hives, and shows the necessity for its expulsion. Draughts of cold air are more likely to add to than diminish the quantity of moisture, by condensing that thrown off by the bees, and the worst feature in the case is that the evil increases by what it feeds on. The hive being rendered so much colder than it should be, more food is consumed to enable the bees to generate sufficient heat to live, and this causes the evolution of more watery vapour, and consequently more condensation in the hive.

The best thing you can do for the bees is to place them on a stand just outside the window or wall, with the front of the hive at right angles to, and very close to the entrance through the window sill, which should

of course be closed. This will effectually stop the draught, and will enable you to operate upon the hive in any way desirable, and the bees will not miss their usual entrance.

We, should place every comb in the hive in our honey slinger, and remove every drop of liquid honey and feed the bees when necessary on unflavoured barley sugar.

If you are unable to effect this, some measures should be taken to aid the bees in evaporating the superfluous moisture from the hive. We earned some ridicule a little time ago (in the *Journal of Horticulture*) through having reported the means by which we successfully arrested a terrible attack of dysentery in one of our finest stocks, but we were then so pleased with the result that we thought it worthy of publicity, and we think similar means would be of service to you now. It was neither more nor less than providing a hot plate (of iron) kept hot by a lamp which was continuously burning for 48 hours, keeping the hive at a temperature of about a hundred degrees Faht. The zinc ventilator was left open, and so also was the entrance to the hive and although it was mid-winter and bitterly cold our bees recovered. Is it not possible to make a nadir to your hive with a bottom to it and some ventilating holes round it to ensure air, and stand the whole on a moderately warmed kitchen hot plate? The nadir would be a receptacle for dead bees, and a preventative of a scalding or burning heat. It is probable that if the bees are treated in this way for three or four nights consecutively, being allowed their liberty during the day, the cause of the disease would soon be dissipated. Ed.

Query No. 65.—I am sorry to trouble you, but I am rather in difficulty about my bees. When I looked into my Woodbury Hive through the window this morning I distinctly saw a wasp inside, it remained for a few seconds on the glass, when it disappeared among the combs, closely followed by three bees. Am I to take this as a sign that the wasps are beginning to gain possession, and will turn out and destroy the bees? if so, what had I better do to arrest the evil? I have lately been feeding the stock, as they have not gathered much honey. My Berkshire hive is about half full of comb, and not over many bees in it; do you think I can winter them safely? How full of bees should a hive be to winter safely? Could I safely join a stock of bees to another about 30 yards away? I like your manner of feeding bees, as described in the October number of the journal, and I shall use it for the hives without holes in their crowns. Had I better wrap the hives for the winter with brown paper or carpet in order to keep them warm?

W.N.G.

Reply to No. 65.—Replying to your query, we beg to say that from the fact of the bees chasing the wasp, there is little fear of the latter having obtained the mastery, in fact, wasps are simply thieves, they never attack bees but will get into a hive if they can, and will steal honey or brood if they can get it, and if they find wounded or dying bees on the ground, they will nip them in halves, and suck out the contents of their stomachs, or carry them off wholly to their nests.

At this time of year the cold often drives the sentinel bees from their posts, and the wasps which are able to bear a colder temperature than the bees, are thus enabled to steal into the hives unperceived. The best remedy as we always argue, is to destroy the wasps nests, and now is the right time to do so, as food being scarce, if a lure be placed for them (say half a pound of moist sugar) they may be traced as they go to and from their nests, with the greatest ease, and if treated to a gill of turpentine, they may in a few minutes be dug out with perfect safety.

It is not easy to say whether your Berkshire hive will stand the winter, nor is it possible to say how full of bees a hive should be to winter safely, so much depends on the state and condition of the hive and combs, and the age and vigour of the bees, but supposing the combs to contain plenty of stores, little unsealed honey and a sufficiency of empty cells for the bees to pack themselves into, we think a sphere of five inches diameter might safely be depended on, but if the hive be badly equipped, most of the cells filled with unsealed honey or syrup, and no empty ones left for the bees to cluster in, five times that quantity of bees would not stand the winter well, taking the average of seasons. You can safely join the two stocks of bees if you gradually bring them together, but if you attempt to unite two stocks, thirty yards apart, (or thirty feet at this season) you will lose many bees. Tie a bottomless sack round your hives, close to the bottom rim, and fill up with sawdust all round the hive, then gather in the top of the sack and place on a milk pan or other cover. Simple Woodbury's may have a piece of carpet wrapped round them, or if tacked on at bottom, they may be stuffed all round with hay or sawdust. Ed.

Query No. 66.—Please advise me what to do, and how best to do it. Yesterday morning I picked up a dead Ligurian queen from one of my hives. I feel sure there cannot be another in, as they must have done breeding some time ago. I have another hive with apparently a weak stock in it, but possibly and probably with a queen. Should I do right at this late period of the year to attempt uniting, if so, how had I better do it? They are in bar frame hives (your own pattern). I should not like to lose the bees, as I have been at a great deal of trouble Ligurianizing during the summer, and in consequence of my taking them to the Moors (24 miles away) and the bad weather coming on, without a possibility of feeding them, I have lost one stock completely. It died, however, since it came back, although fed at once; it seems to have been too much reduced to recover. I may add that I saw over 300 hives on the Moors. Many were dead and all in a most wretched condition. If my experience as an amateur in Ligurianizing would be of any service to you I would give it. —Yours, respectfully,

E. Eastwood.

Reply to No. 66.—We should recommend you to make a thorough examination of your hives and ascertain whether they are in the condition you suspect. If they are both capable of standing the winter, it might repay you to introduce another queen to the supposed queenless stock, but if you prefer it, it is quite safe to unite them. In doing it no extra precaution is necessary beyond the selection of a fine day when the bees will not get chilled. Give them a little warm scented syrup, take the combs away from both lots, after taking the precaution to cage the queen in one of them, then mix all the bees together, and return one set of the combs to the bees, selecting such as you think best.

If the stocks are any great distance apart, it would be better to get them gradually together, so that their union may not effect or be effected by, any alteration of the locality. Ed.

Query No. 67.—I am now arranging my box hives, and shall be glad of your advice if you will just answer my questions in order. About what weight of honey would you leave in the six

frames? My difficulty is that most of them are more than half filled with honey, and I am afraid they will not have room for breeding.

H.B.

REPLY TO No. 67.—If the combs are only about half full, there is little or no danger of want of breeding space, as there will be no eggs deposited for perhaps a month or two, and in the meantime more cells will be emptied, and when the breeding commences there will soon be a vast clearance of stores, and more room will be given. About twenty pounds of honey ought to be sufficient, and if sealed, will be. ED.

QUERY No. 68.—In one hive I have left four frames about half filled with sealed honey, and have inserted two frames of combs which have been emptied by the extractor. In some cases the cutting has reduced the depth of cell. Will this be a hindrance to the breeding or will the bees adopt it?

H.B.

REPLY TO No. 68.—The bees will speedily repair all damage to the comb, and every cell will be restored to its original size, shape and appearance. ED.

QUERY No. 69.—I have now enough frames taken out to make up when patched with empty worker combs a complete residence for a colony. One of my box hives, after taking away the side frames has 7 left more than half filled with honey, and some of it in lumps of various shapes. I propose to prepare another hive with the aforesaid empty frames, and transfer all the bees, and having cut out the superfluous honey and drone comb from their old frames, to populate them with the bees from a skep, which weighs about 30lbs. Do you approve of this proceeding?

H.B.

REPLY TO No. 69.—Undoubtedly it is the very best thing you can do, provided you give them sufficient sealed honey to live upon. It is late to drive into empty combs and feed, there will be too much moisture in the hive. ED.

QUERY No. 70.—Supposing you do, would they drive? I find the feather does not clear them well now they are so clustered, and seems to irritate them. I thought whether the frames could be put above them, rather far apart, in a bottomless hive, and then drum.

H.B.

REPLY TO No. 70.—Bees will drive, if they are warmed up by giving syrup warmed and not too thick, feed for a few hours on thin warm syrup on a fine day, so as to cause excitement and make the bees leave their cells, then drive in the usual way. Afterwards cut the skep in twain between the combs, and take them out *seriatim*. You will not be able to drive the bees from one box hive to another, as you propose, without a good deal of trouble. It will be better to excite them first with warm food, and then remove the combs, and brush them into the new hive. ED.

QUERY No. 71.—Only just returned home, and am shocked to find several, if not all my 16 stocks, almost destitute of honey, although they have received half a pickle bottle of syrup nightly. I have ordered them a full bottle all round, but this cannot possibly save some of them from dysentery if they could otherwise live, as the straw of the skeps seems partly saturated with moisture. If it is too late to join them I must look for great loss. Please tell me? How am I to get the bees out of a Nutt's single comb cross bar hive?

TYRO.

REPLY TO No. 71.—It is never too late to unite stocks of bees if you get them near each other beforehand, and choose a fine day, *i.e.*, a day on which they will not become chilled. To get the combs out of the observatory hive, you must remove the glass from one side of each wing, when, if in frames, the combs and bees may be easily removed, but if worked to fixed bars, they must be cut out and utilized, as in transferring. Ed.

QUERY No. 72.—I should much like to know how you would advise me to effect my purpose of getting all my bees by degrees into the "best" hives. My idea is to drive out the bees just before they would swarm naturally into the new hive, and with a little food treat them as an ordinary swarm, and leaving the stock till the brood is hatched, which is, I believe, about 21 days, drive them out, and give them as much of their comb as is fit for use by cutting it out and fixing into the frames, thus making two out of each stock; or would it be advisable to strengthen the lots (as by this means of doubling my number I should almost have more than I want) to make every two into three, and in this case, which would be the best way to effect it, by joining the first drive of two hives or the last? After your letter I am anxious to introduce Ligurian blood into my apiary, and suppose that had best be done at that time.

C.E.F.

Dawlish.

REPLY TO No. 72.—As you do not wish to increase your stocks to any great extent, we recommend you to devote the strength of your hives to procuring a good honey harvest next season, and to trust to the chances of their swarming for your increase.

If you drive swarms out of each pair of hives nearest each other, and unite them in bar frame hives close to the spot where they were driven, they will form excellent stocks. In twenty one days the principal of the brood in the driven hives will have hatched out, when they should be again driven and united, the combs of each pair transferred to a bar frame hive, and the united bees added. Of course when transferring, it will be at your own option whether you will introduce any drone comb into the hive, but as you intend to ligurianize you may find a portion in the centre of each bar frame hive essential. Ligurianizing was fully described in the May and July number of the journal. ED.

NOTICES TO CORRESPONDENTS AND ENQUIRERS.

G. E. H. BREWOOD. The bars being 19-20ths wide "when finished" the holes should be a little more than that distance from centre to centre, say one and a half inches to allow for the saw cut, and for cleaning off. Your other queries are answered in the article on Hives in this journal

A. ADAMS, Melksham. We are almost afraid that your bees being inside a loft, will get too much ventilation when the wind blows against the entrances, as we explained on page 74. A skep or skep super filled with hay or straw, placed over the hole in top board of hive would form an excellent means of ventilation, but better still would be the removal of the crown board, and the substitution of two or three thicknesses of carpeting, and then a layer of hay or other material from the loft.

C. E. F., Dawlish. We are much obliged for your good opinion of our "propositions" for amending the hive. We shall certainly make our own hives, but do not wish to interfere with the trade. There is little doubt but that some of the usual hive makers will adopt our suggestions and produce a hive on the principles we advocate, or probably they will endeavour to improve upon them. The mode of Ligurianising a whole apiary in one season is described in the May and July numbers of the *British Bee Journal*. It is very simple and easy, but during the first season the chances are very much against the young queens receiving pure impregnation. As, however, the purity of the drones is not influenced by the queen's mes-alliance, the chances in a second year would be much more in favour of the desired consummation.

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DIRECTIONS TO CORRESPONDENTS & QUERISTS.

1.—Write in a legible hand on one side of the paper only.

2.—Use no abbreviations which are not to appear in print.

3.—Keep every query distinct and separate, and give the fullest possible particulars, stating also the kind of hive used.

4.—When requiring an immediate reply, send a stamped ADDRESSED *envelope, or stamps for cost of telegram.*

The British Bee Journal.

DECEMBER, 1873.

In our last we rather confidently asserted our conviction that the sensational hive and super, exhibited at the late Manchester Show were not the natural outcome of the season, and we are now favoured through the columns of the *Journal of Horticulture* with a description of the ways and means by which those wonders were accomplished, proving our surmise, which appears to have been generally shared, to be correct.

On the face of it, the prizes offered in class D, "For the best glass super of honey, the produce of 1873," were intended for the best supers filled by the bees of individual stocks with honey of their own gathering during the past season, and no one but Mr. Breen appears to have thought otherwise. He evidently considered the prizes were intended for those bee keepers who were able to persuade their bees to store the largest amount of honey in a super during the season 1873. No matter how obtained, the object he had in view was the production of a large super, filled in the best manner with the produce of 1873, and here in his own words is his problemn,

"Given an International Exhibition, a bad season, very limited time, and a glass, which the manufacturer turned out even larger than what was ordered, and which was "bound to be filled." How was it to be done?" Mr. Breen's own reply, "By feeding and by feeding only at all times unfavourable for honey gathering," and his further remark, "I am not going to tell how many of my hives I robbed, in order to help the Crystal Palace, but will simply assert from the day I placed it upon the hive, until I removed it from it, the bees were fed with nothing but honey, pure and simple," will satisfy our readers that the wonderful super was more the work of the bee master than of the bees, and that excepting the innocent beauty of their finished combs, there is really nothing connected with its production worthy of admiration.

The hive and super, which weighed 136 pounds, and which was said by its owner, Mr. Pettigrew, to have been filled by his first swarm of this year, is a very tame affair after all. On page 387 of the above Journal Mr. Pettigrew writes:—"At the Manchester Exhibition it was my intention to appear with 20 large supers, but the season was unfavourable. Had it been favourable the supers would have been filled without artificial help. The International could not wait for a favourable honey year, hence I had to resort to artificial means to get my palaces filled." We leave these facts to the consideration of our readers without comment, and sincerely hope that in all future exhibitions hives and supers so filled, will be at once disqualified.

The proposal to form a society of bee keepers continues to meet with approval, and the suggested meet-

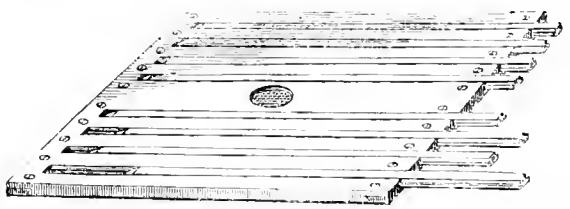
ing at the Crystal Palace, promises to be well attended. The proposed show of bee furniture has created considerable interest, and several well-known exhibitors have promised their support, and we are now awaiting the reply of the Crystal Palace Company as to the terms and conditions under which they may be carried out, and when we receive these, we will lay them before our readers. We have also received promises of pecuniary aid in furtherance of these objects, and from the general tone of the communications which have reached us we are really sanguine of success.

We agree with those who suggest that it would be well to hold them on an occasion when other attractions at the Palace induce a reduction in railway fares and shall be glad of any other suggestions in furtherance of the objects in view.

We have been favoured by Mr. J. S. Wood, of Nyborg, Denmark, with a translation of the rules of a Danish bee club, which numbers many hundreds of members, which we are assured work remarkable well, and which, with a copy of those of the Buxton bee club, mentioned on page No. 66 shall appear in our next.

HIVES.

A "Lanarkshire Bee Keeper" on page 107 gave a description of the crown board which he uses, but as he thinks it is not described with sufficient clearness to enable amateurs to make them, he has kindly favoured us with one of them as a specimen, an engraving of which we here produce.



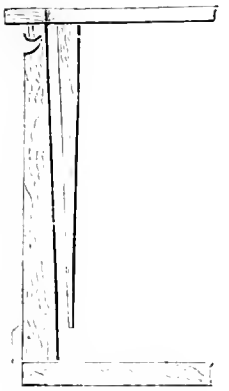
It is made for a hive with nine frames, and is fitted with the Stewarton slides, and will doubtless be appreciated as a boon by those who intend to adhere to the Woodbury principle. Writing of its advantages, the inventor says, "You can feed at any time, with little or no disadvantage to the bees. The slides are moveable, and offer great facilities for ventilation, and during the time the supers are being filled, the means of communication with them can be regulated to the greatest nicety. A weak stock may be fed with honey comb by laying it on the centre of the board, and withdrawing such of the slides as may be over the cluster placing a bell glass over the whole so that its condition may be perceived. Queen cells may be raised by queenless stocks, by giving brood comb under similar conditions, with the *modus operandi*, under observation. Queens may be introduced under the same circumstances, caging them on comb immediately over the cluster, and withdrawing a slide, and many other operations may be performed with the aid of this crown board, which I consider *multum in parvo*, and I have used it for a long time." It is exhibited with some of the slides partly withdrawn, so that its construction may be better understood, and because the value of the Stewarton slide is likely to be debated as may be gathered from Mr. Carr's letter in this number of the Journal.

There are several matters of detail connected with our proposed hive, which ought to be alluded to, but which may be safely left to the whim or fancy of the hive builder for execution.

For instance, it will be necessary to adopt some means by which the frames (?) in the hive shall be kept firmly in their positions longitudinally, so as to prevent all injury to the bees by the ends of the combs or frames being forced against the inside of the back and front of the hive, and crushing those between.

This is prevented in the present style of hive by the ends of the top bars being made to rest in or butt against the rabbets, or in the case of hives, (as in the Pettitt) where the said bars run through to give a handhold outside of them, they are notched on their under side to form shoulders, which coming between the front and back of the hive, prevent all longitudinal movement when the frames are placed in their correct positions. A second point is, that as the top bars will extend through the hive, they must necessarily rest upon the top of the front and back of it, and some contrivance must be adopted to prevent the crushing of bees as they are placed in position. In Mr. Pettitt's hive before alluded to, no provision is made against this possibility, and consequently the greatest care is necessary, or the lives of many bees may be endangered. In Mr. Neighbour's new hive this danger is reduced to a minimum by the adoption of a notched rack made of zinc, the thin edges only of which are presented for the bars of frames to rest upon, but inasmuch as zinc is an excellent conductor of heat, and its surfaces are exposed, and liable to be affected by the outside temperature, we do not propose to use it, as we fear its presence immediately at the top of the hive may cause the too rapid condensation of the vapours within, and thereby

create a dampness, which the bees will not be able to expel, and which, as shown by our scientific correspondent, Mr. Cheshire, page 91, is inimical to the well-being of a colony. We therefore propose that the front and back of the hive shall be cut away at their outside angles, so as to leave the smallest possible thickness of wood on their inner edges for the frame bars to rest upon. Due care must of course be exercised in determining the thickness necessary, but we think an eighth of an inch will be found sufficient to withstand ordinary wear and tear, and that in practice it will not be found objectionable. The parts of the back and front which are cut away, may be simply chamfered off with a common plane, taken out with a filister, or grooved away as indicated in the accompanying illustration.

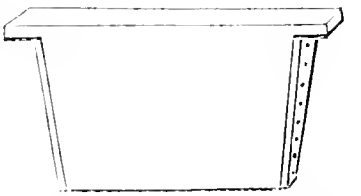


To prevent all longitudinal movement of the frame bars, we would insert small wire staples, similar to those used by bell hangers, or plain studs or strips of wood, metal, or leather, either of which could be fixed to the bars to fit immediately outside the top edges of the back and front of the hive, and would ensure perfect steadiness, and ease in manipulation.

Among the advantages belonging to this form of hive, one of the most important, will be the absence of all inducement for the bees to use propolis in an excessive degree.

There will be nothing within the hive to tempt them to do so, no notches or cracks, no spaces or acute angles for them to fill up, and there will be no room outside the depending portions of the frame bar for them to build comb in, as they so often do in other hives.

On page 99 we gave an illustration shewing the parts of the sides of the hive which are intended to be moveable. The idea is not a new one, as dummy frames have often been recommended. There is, however, a speck of originality about their feather-edged form which is invaluable. They should be cut of the shape here indicated, their ends being clamped by pieces of wood running the other way of the grain, and either framed or nailed on, as may be most convenient, so as to strengthen them, and prevent warping or splitting, and their horns, the projections at either end, should be of exactly the thickness of the frame bars, to ensure their being level with them when in position, but may be of any length for convenience in handling.



It will be manifest that as the frames will not touch the front and back of the hive, except as they rest upon them at the top, so it will not be necessary for these dummies to do so either, nor for them to go nearer to the bottom of the hive, than the combs will be built, as their purpose is not that of a dividing board and as space will thus be left at both ends and the bottom of them, it will be almost impossible to injure a single bee, either in taking out or replacing them, if ordinary care be used, and the bees will be quite unable to glue them fast with propolis.

Many of our readers will doubtless object to the use of these moveable dummies, on the ground that the space occupied by them might equally well be occupied by a comb of the same size and shape, and it is true, as we have experienced for several years, that bees will build wedge-shaped combs to fill such spaces, but inasmuch as they are ill-shapen and have their centres of gravity misplaced, which necessitates the formation of waxen supports against the sides of the hive, we do not approve of them. Besides with the hive we are now proposing, there will be no reason why ordinarily any one of the combs should be set down outside the hive for any purpose, during examination as the removal of the dummies will give ample space for manipulation, whereas in the absence of them one or more combs must be so treated. We are quite sure it will pay to make room in the hive for the dummies if only for the purpose of creating space by their removal.

We are now prepared to build a *frame bar* hive, for such only can it be considered, as it will not contain any perfect *bar frames*, but the determination to build involves the question of size and shape, and opens up

such a wide field for discussion that we pause to survey and consider our position, before entering thereon, On an occasion when a question was asked "is not one man as good as another?" the reply is said to have been "Yes, and better too," and we are inclined to think that one *hive* is as good as another, and *better too* when it is more thoroughly understood. Our object has not been to invent a new hive, or to propound a new principle, nor do we seek to overthrow any of the hives now in existence, as we believe good results may be obtained by the use of any of them provided the bees in them be properly managed.

As an actual dwelling place for the bees, there is little doubt but that a straw skep is as good as any other receptacle, but as a means of cultivating the bee it may be accounted one of the rudest and crudest of inventions. Still it has its measure of utility, and is so intimately associated with our first idea of bee keeping, that it is not singular that those who defend its continued use find large numbers of supporters.

Many attempts have been made to improve it, simply from its being so very inconvenient, when the the removal of combs becomes necessary, and it has been much improved by the adoption of moveable bars, on which the bees were led to build their combs, and by means of which it became possible to remove the whole contents of the hive, with little or no injury to either the combs or bees. This was manifestly a step in advance, and gradually led to a better understanding of the *manners* and *customs* of the bees, and of the general economy of the apiary.

Columella, writing more than 1,800 years ago, says, "bee hives must be fabricated according to the condition and circumstances of the country. For if it be fertile of the cork tree, without any doubt we may make very useful hives of its bark, because they are neither extremely cold in winter, nor exceedingly hot in summer, or, if it abounds in fennel giants, of these also vases are woven with equal conveniency, as they are like to the nature of bark. If neither of these is ready at hand, they join willows together, and weave them like weavers work, and if these cannot be had they must be made of the wood of a tree, made hollow, or sawn into boards." Other kinds of hives are described, those made of potter's earth being particularly objected to.

It is also evident that in those days some means were used for dividing the space within hives, equivalent to our division boards, for when preparing hives for winter, the author says, "After you have cleansed their domiciles in a very bright sunshining day, the covers (?) must be put in the inside, close to the honey combs, all the empty part of their seat being excluded, that so their cages being reduced to a narrow compass, they may the more easily gather heat during the winter, and this must always be done even in those hives, which by the fewness of the common people, are but thinly inhabited."

These extracts plainly shew that the use of wood in the manufacture of hives is not a modern innovation, as many who advocate the use of the straw skep would have us believe, the work also proves that many of the practices now in use, on which modern writers pride themselves, were well-known when our Saviour trod the earth. For instance, the hunting of wild bees by painting their backs to identify them, and by enclosing them in a hollow tube, and letting out one at a time, and following it, &c., excising combs, the depriving system, with knives such as are now in use, uniting swarms and weak stocks by sprinkling with syrup, fumigation by the smoke of burning galbanum and ox dung (fustian was probably unknown then), clipping the wings of queens, and many other matters easily recognizable, although quaintly described. *There is, however, no mention of the use of the sulphur pit.*

Hives in these days were made as the majority are now, round, square, and (ob?) long, each of which may have been of wood, either as a hollow log, or made of wooden boards. There is, however, no mention of straw having been used at all, except to protect them in the winter; so that if "antiquity" is any guide, wood may now be safely depended on for their construction, and square or oblong hives cannot be considered modern inventions. The hive we intend to propose, to be most easily made if of wood, should be either square or oblong in shape, but the size must be governed by the nature of the locality for which it is intended, and the system there in use.

Hives for storifying are usually shallower than those used either for collateral purposes, or for depriving by the supering system, but as we wish to avoid all collision of systems, we shall endeavour so to construct our hive, that it shall be capable of modication to suit them all, and that each intending hive builder may adopt any or all the suggestions offered without seriously departing from that he may have already adopted.

Almost all English bee keepers agree that wooden hives should be made of light porous pine, on account

of its absorbent and non-conducting properties. This material is usually imported into this country in the form of planks, which may be cut into boards, and is commonly of about 11 inches in width, generally called depth. It is seldom of narrower dimensions, and is more expensive (proportionately) if wider, and therefore to save loss of material, and prevent waste of labour, we propose to build our hive of pine boards, of as nearly 11 inches in depth as they may happen to be. Exactness in this respect will not be essential, as our frame bar ends will not reach down to the bottom of the hive, nor need any support there, so that the difference of a quarter of an inch in depth one way or the other, will not interfere with their adaptability. At this point we wish to correct an error on page 98, where we stated that the rabbetted rail, invented by Mr. Lee, of Windlesham, "does not dispense with the bottom rack and rail," so odious in our eyes; whereas Mr. Lee informs us that the bottom rack is dispensed with, as an arrangement exists at the bottom of his hive, similar to that at the top, and consequently the rack is not required to keep the frames in their places; undoubtedly a step in advance. We feel it would be quite useless to attempt to decide on hives being necessarily of any particular size, and prefer not to create discussion on the subject, as it is impossible to give dimensions which will suit all times, circumstances, and places, or coincide with the ideas of the generality of bee keepers.

WHAT TO DO, AND WHEN AND HOW TO DO IT.

Feeding and ventilation are the subjects which have occupied most of our attention during the past month, the number of letters we have answered with regard thereto being almost incredible. It is somewhat singular that so many of our readers have delayed the preparation of their stocks for the winter, until it is now too late to do so without increased trouble and expense, which may possibly be futile, and it can be no consolation to such to be reminded that the directions we gave in the early autumn months were plain and might have been easily followed, and that had they been carried out these late difficulties would have been avoided. The golden opportunity is passed, and cannot be recalled, and there remains only the chance that by constant careful attention, weak stocks may be enabled to withstand the rigour of the season so close upon us. The chief difficulty appears to lie in the fact that "the bees will not take the food offered them;" in some instances they are apparently "healthy," in others "dull" and "stupid," again, "they crawl listlessly out of the hive, and, unable to fly, fall to the ground, their wings trembling, and their aspect most melancholy," the varied descriptions of them culminating in "What am I to do?"

A weak stock of bees such as we are now considering will almost invariably cluster against the side of a circular hive, or in one of the corners of a square one, to enable them to economise their heat, and such cluster is sure to be, as far as possible, from the central hole in the crown of the hive, where food is usually administered.

The food itself is always colder than the bees, or speedily becomes so, and is often placed in feeders considerably above the combs, where it helps to absorb the little heat the bees may be able to generate, without in itself becoming any warmer, and where it is often impossible for the bees to partake of it, because they are physically unable to leave the warmer part of the hive, in which they have clustered.

In all such cases, we have recommended that the entrances of the hives should be closed with perforated zinc, and that at sundown they should be carried into a well warmed room or greenhouse, so as to make it possible for the bees to traverse their combs in search of food, and that milkwarm syrup should then be administered in a bottle in the usual way. This will ensure a hand-to-mouth supply, and prevent actual starvation, and may be so managed as not to cause the loss of any bees, as if the bottle be removed, and the bees returned to their stand on the following evening, and the entrance kept closed until they have become quiet, the excitement caused by the feeding will have no ill effect. This special mode of feeding may be repeated from time to time as required, but care must be taken not to overcharge the hive with liquid food, or dysentery will certainly ensue, which in a weak stock is nearly sure to prove fatal. When the bees have improved in tone and vigour by this kind of treatment, barley sugar may be given without fear of injury, as if properly made it can only be consumed by them in small quanties, proportionate to the heat they are able to generate, but when badly made, it is apt to liquify and run down into the hive, or to become sugary and granular; in either of which latter cases it is not good for bees, as in the former it may cause dysentery, from superabundance of moisture, and in the latter the bees will be unable to take it at all.

In many cases of late feeding, the advantages of the bottle—that best of all feeders—are nullified by the

careless way in which it is applied. For instance, in a case where the loss of heat was equivalent to loss of life a bottle not more than two inches in diameter was placed on the perforated zinc, which covered a hole in the crown of a board of nearly four inches in width, leaving an annular ring of the zinc quite exposed. Of course the bees could not come near a place, which, as it were, tempted the cold air to rush through the hive, but were obliged to seek shelter in the side combs, whereas had the exposed portions of the zinc been covered by a duster or something of the kind being passed round the neck of the bottle, draught would have been prevented, all would have been well.

In all cases where the entrances of hives have been closed with perforated zinc or wire work, care should be taken to keep them perfectly dark, as otherwise the bees inside would cause them to become choked up, and so lead to the suffocation of the stock. When the entrance is closed and darkened, and the hive has been placed in a warm apartment, the zinc on the feeder hole should be exposed, and the bees tempted towards it by small doses of warm syrup, and when the warmth and food has rendered them active, the bulk of the food may be given, but it should (if liquid) always be given in a bottle, see No. 1 of Journal.

Regarding ventilation, it is needless to repeat what we have written in favour of the quilt, as our respected correspondent, Mr. Carr, has, in giving his own experience, said all we could wish to say, and as our correspondents in need of the information have already had it, we forbear making further remarks on the subject.

Correspondence.

VENTILATION.

To the Editor of the BRITISH BEE JOURNAL

SIR,—As all bees in straw, wood, and glass hives are better with ventilation during the winter months, say from the middle of November to the middle of February, when the bees cannot ventilate the hives for themselves, so for a number of years I have removed the covers of my hives, and tied pieces of blanket, one or two folds in thickness on the hive in place of the cover. This I find answers the best of any ventilation. The next best plan to ventilate the hives is to put a piece of wood an eighth of an inch thick (a lucifer match) under the two back corners of the covers.

WILLIAM CARR,

Newton Heath, near Manchester.

BEE KEEPERS AND BEE MASTERS.

SIR,—Our dear old friend, William Augustus Munn, is no more. He died rather suddenly on Sunday, October 12th, in the 63rd year of his age, having been born on the 28th day of October, 1810. He had a good kind heart, and up to his last was active with his hobby "the bees." His article, page 103, in the *British Bee Journal*, appeared in print nearly three weeks after his death, and the conclusion of that article is expressed in language of advice to all of us, as if it came from the grave:—"Let us all then try and extract all the good we can from the various hives suggested, and guided by the impartial reviews of our bee master editor, let us remember that bee stings are all cured by a little blue bag, if we should take to it, and that our lives are not forfeited by any stings we may give, as our pens are not barbed with poison."

His loss will be felt by all lovers of bees, and there is a large debt of gratitude due to him for having so long worked to improve bee culture, and having assisted so very much in bringing apiculture to the perfection it has now arrived at. Major Munn must have commenced early to take an interest in those wonderful creatures, the bees, as he could have been only 24 years old when he first invented his bar frame hive in 1834.

Huber was the inventor of bar frames, but his frames were an inch thick, and when put together formed the ends and top of the hive, but the Major was the first to put bar frames in a box or case, the same as the modern bar frame hives, and after testing and improving his hive for nine years, he took out a patent in Paris for it in 1843.

Rev. L. L. Langstroth, in America, and the Pastor Dzierzon, in Germany, (two of the cleverest bee masters in the world, may they long live to enjoy their honours) invented their improved bar frame hives at the same time quite unknown to one another, about the year 1852, and on October 5th of that year Langstroth obtained his first patent for his hive, and with these improvements bee keeping has become of national importance in many countries in the world.

It was not with hives only that Major Munn devoted his time and talents to improve bee culture, as is seen in his various and multitudinous writings. He published a pamphlet on bees in 1844, and another edition in 1851, and in that year exhibited his hives, &c., at the Great International Exhibition in London. In 1870 to crown his long labours, he reprinted (and greatly added to) his friend, Dr. Edward Bevan's work on the "Honey Bee." *He also drew and coloured himself many pages with bees, combs, and brood in all their different stages, which illustrates most curious facts in nature, never before seen, taken and drawn under the strongest magnifiers*, which is the most scientific work on bees ever written in England. Major Munn has also written a great many articles for the journals and magazines in this country and America.

We can now only deplore the loss of our dear friend with the matured vigour of his pen and intellect, and it is a wise providence that does not let us know whose turn it may be next, but it is a warning to us all, not

to waste the talents that have been entrusted to us, but, like our departed friend, to freely distribute them for the good of our fellow creatures.

WILLIAM CARR,

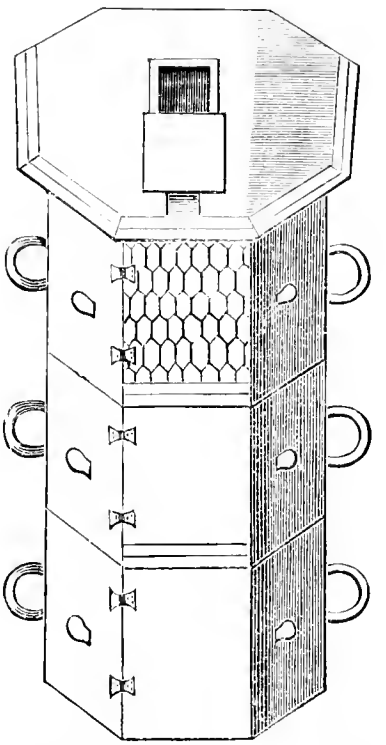
Newton Heath, near Manchester.

THE STEWARTON HIVE AND SYSTEM.

A "Renfrewshire Bee Keeper" on page 88, seems to have felt the light tread I made on his corns very much. Now I really had no intention of hurting him, although he has had no mercy on poor Mr. Pettigrew' but I could not let such palpable errors pass unnoticed, and in reply he repeats those errors, and makes it out that in my article on page 75, I said things that I did not. Last month I wrote a very cutting reply, but after I had written it, I thought that he probably like myself, had no other object in view than to encourage bee keeping, and to give to the public any information that we thought would be of service to them, and that angry words were so different from the soothing hum of our favourites, and it was not the way to assist bee keepers in making their bees more interesting and profitable to them.

I must make a few remarks on his article to prevent erroneous impressions, but I will draw it as mild as I can. A "Renfrewshire Bee Keeper" begins by saying "If Kerr (or Carr as spelt in England) did not invent the Stewarton hive in 1819, I should be interested to be informed who did?" And again he says, "When next Mr. Carr takes up his pen to enlighten your readers as to the 'origin of storifying' his researches must ante-date 1668." Now, I never said that Moses Rusden or anybody else was the inventor of the "storifying system," and I had no idea that a "Renfrewshire Bee Keeper" claimed for Robert Kerr that good invention of "storifying," but thought he only claimed for him the invention of the Octagon Stewarton Hive, so I proved to him that Moses Rusden, in his work published in 1679, first describes the Octagon Stewarton Hive, as made by Kerr, with bars or frames inside a box.

Rusden on page 81, thus describes his box hives:—"They should be made of deal or fir wood. The form is octagon or eight square, which, being near to roundness, is much better than to have them four square, because the bees lying in a globulous body in the centre of the hive, are thereby the nearer to the circumference in this form, as well as in round hives. The height of the hive is ten inches from the top to the bottom on the outside, and sixteen inches over from outside to outside, with a sliding shutter to run easily in a groove in the middle of the top, backwards over the back window, the shutter is to cover an hole five inches square in the middle of the top of the hive, also in the hive are two large glass windows, one before, the other behind, with doors to cover the glasses, and two handles on each side, one for lifting them up, also a frame in the inside, made fast with pins for the bees to fasten their combs upon." Is not this a description of the present Stewarton hive, said to be invented by Kerr?



STEWARTON FRAME HIVE, INVENTED 1679

I was well aware that John Geddie obtained a patent from King Charles II in 1675, (not King James II. as stated by a "Renfrewshire Bee Keeper") and used octagon hives, but they had no frames inside for the bees to fasten their combs upon, but simply octagon boxes, but Rusden in his work published four years after, improved Geddie's hive and put frames in for the bees to fasten their combs upon. So as this is the earliest account I have seen of the Stewarton boxes, I believe Moses Rusden was the inventor of the Stewarton hive 194 years since.

Now for the "storifying system." John Geddie in his work "The English Apiary" published in 1675, claims to be the inventor, but he was not, as Dr. Charles Butler, (the father of English apiarians,) in his work, "The Feminine Monarchi, or a treatise concerning bees, and the due ordering of them," published in 1609, storified his hives in a very singular manner, by turning the stock hive bottom upwards, and putting another hive on the top of it. Samuel Purchas in his work, "A theatre of political flying insects, &c.," published in 1657, says on page 85, "I have not found Butler's plan of turning the stock hive upside down and placing an empty hive on it to answer, as the bees have lengthened the combs upwards and not downwards from the top of the hive, newly set over them, so that by parting of the combs which will not be without trouble, I never found any to have wrought above half-way upwards, so that having no foundation but the old combs, it is impossible to set down the new hive for the stock."

On page 58, Purchas says "All things considered the straw hives are the best; and the bees do best defend themselves from cold when they hang round together in manner of a sphear or globe, and therefore the nearer the hives come to the fashion thereof, the warmer

and safer they bee. The best shape of hive is that likest to an egg, with one end cut off as wee usually order it when wee eat it."

Thomas Hyll, Londoner, in his work, "A profitable instruction of the perfite ordering of bees, with the marvellous nature, propertie, and government of them, and the necessarie uses both of their honie and waxe, serving diversely, as well in inwarde as outwarde causes, gathered out of the best writers. Published in 1574." Now Hyll and the writers before him appear to know nothing about storifying, and as Butler is the first one that I can find that mentioned it, I think he was the inventor of the "storifying system" as he was of many other things.

I cannot understand how that plague of a slide in the Stewarton bars, said to be invented by Kerr, can shut off the queen nurses and pollen collectors of the central breeding position from the honey department, as stated by a "Renfrewshire Bee Keeper" and yet admit the bees loaded with honey. Surely he does not mean to say, as his statement implies, that the honey collectors are different sized bees from the nurses and pollen collectors?

These slides are the worst part of the Stewarton hive, as the bees fasten them with propolis so fast, that they cannot be drawn out without heating them, and I have frequently broken them in attempting to draw them. Then again being only three eights of an inch thick, they do not retain the heat in the hive, as the cover should be the thickest part of the hive, as heat always ascends, and it seems ridiculous to have the sides five eights of an inch thick and the slides and bars only three eights of an inch thick as the cover. I soon altered my Stewarton hives, did away with the slides and put a good one inch cover on the top, as F. Cheshire in his article, page 94, says, "allow as little heat as possible to escape through the walls of the hive."

I do not confound two distinct operations together nadiring, and supering, as a "Renfrewshire Bee Keeper" supposes, but I condemn his system of nadiring and supering, which is contrary to all good management as now practised by all bee masters; not "bee keepers." Who except a "Renfrewshire Bee Keeper" would rather put a nadir underneath, than a super on the stock (or two supers at a time to save trouble as he says)? so that as soon as the bees have built some combs in the top super, they carry all the honey into it, and the queen, drones, nurses, and pollen gatherers go up into the super on the stock box, as it is warmer than the nadir below, and fill it with brood, and so spoil all the beautiful virgin honey combs. As I found this was generally the case, I raised the first super I had put on the stock box, when it was about half or three quarters filled with combs, and put another bar frame super underneath it, and if the queen came up (which I do not allow with my adapting board with narrow slots) she would find no comb in which to lay her eggs (as a "Renfrewshire Bee Keeper" says) but an empty space immediately over the stock box. But then I always let the queen have plenty of empty cells in which to deposit her eggs, not one of those shallow small things as sold for Stewarton hives, as every bee master condemns such shallow stock boxes, and after a great number of years experience, I am actually adding an inch to the depth of my nine inch improved bar frame hives, and going back to the same depth of hive that my father and I first used.

My father worked on the storifying system three quarters of a century since, and I have now got a stock of bees in a hive that he had made in 1806. There have been bees in it from that time to the present more or less, and it is now as sound and good as on the day it was made. Does not this show the great durability of wood over straw hives?

The Manchester School do not advocate a large roomy straw skep as the *ne plus ultra* for pure comb and successful bee keeping, as stated by a "Renfrewshire Bee Keeper," but they advocate a moderate sized bar frame hive, on no account larger than the Rev. L. L. Langstroth's hive, (generally called in England the Woodbury hive) containing about eighteen or nineteen hundred cubic inches of inside space.

It is all nonsense about a "Renfrewshire Bee Keeper's" vacuums and extra labour, (as poor Nutt thought) in carrying the honey into the supers, and he asks, "But will our little favourites be so put upon?" I answer, "Yes," because it is their nature to carry the honey the farthest from the entrance to their hives. A "Renfrewshire Bee Keeper" claims this expression as his own, "Why we all know it was used nearly three hundred years since."

My experience coincides with a Renfrewshire's, that if two empty supers were put on a stock at the same time, (but what bee master would ever do such a thing?) the bees would not commence work in the top super, but in the one next to the stock box, and I say as soon as they have filled it with comb the queen will enter and spoil all of them with brood.

It is ridiculous for a "Renfrewshire Bee Keeper" to talk about "the tons of honey the Stewarton hive has yielded the last fifty odd years;" it is not the hive that produces the honey, as bees have been known to fill an old soap box, on which the hive had been placed, with as splendid honey combs as was ever taken out of a Stewarton hive. It would be just as ridiculous for me to say, "The hundreds of tons of the finest honey comb for the market that bar frame hives have yielded the last ten years, nay we may say that have been obtained out of old straw hives or wicker baskets plastered with cow dung as used about Blackpool."

I repeat there is nothing in the Stewarton hive that we do not get, and a great deal more in an improved bar frame hive, which you can enlarge to twenty bar frames or diminish to three at any time, whenever wanted, in two or three minutes.

I do not believe in anonymous correspondents, as nothing should be admitted into our journal that any one need be ashamed of. It is a rule that has answered well with the *American Bee Journal* to publish their names and addresses, and it has made that journal what it is.

WILLIAM CARR,

Newton Heath, near Manchester.

CONDEMNED BEES.

DEAR SIR,—Under the heading "Experience," in last month's number, you show what A.A. has been doing in the way of taking condemned bees. Will you kindly allow me to give you a little of my experience in that particular?

In the first week in August, 1870, I took up thirty six stocks, and having reduced their number to eighteen by uniting them, I fed them with as much honey and loaf sugar during that and the ensuing month as I could get them to take, with the circular and bottle feeders, but they gradually dwindled away and on the 1st of March, 1871, I had only two left. These I took into the house, but they both died before the end of April, and so I lost all. They cost me something to keep during the eight months I had them, and I need not say I have not since tried to keep condemned bees without honey combs.

J. H. KEDINGTON.

P.S.—I hope "A.A." will let us know how he gets on with his stocks in April next.

INFORMATION WANTED.

SIR,—Could you or any of your correspondents kindly inform me where the oft-quoted poem on bees, by Dr. Evans, of Shrewsbury, is to be had, if it was published by itself, or appeared as a contribution to some poetical work? Also, where the wire queen cages, figured in last number, are to be had, as tobacconists do not sell such a pattern of pipe cover now-a-days. Those in the trade now want the little invaluable eyes.

W. I.

PATRON SAINT OF BEES.

Some years ago among the cottagers in the North of Devon, who paid their rents with their bees, it was, I am told, the custom to move or sell stock hives on St. Gregory's day, March 12. Can you or any of your readers inform me whether St. Gregory is (as he is there called) the Patron Saint of Bees, and if so, why so? I certainly was very fortunate in moving three of Neighbour's wooden hives at four p m on that day of this present year, with the loss of only one bee, much to the astonishment of the country gardener, an enthusiast about bees under the old brimstone system; the flyman who came to carry the stocks to their destination, also a bee keeper, was so delighted with the success of the move, that he positively refused to receive any hire for the conveyance or for his services. In Mid-Sussex I am informed that the twelfth day, *i.e.*, Epiphany, is thought the best time for moving stocks. Another custom I heard of in East Sussex. is that spring swarms are not usually for sale, but stocks are only sold and moved in the Autumn. Why is this?

To encourage the cultivation of flowers in the cottage gardens of the village street, I gave away various seeds in the spring time on the plea for providing more food for the bees. Having understood that sunflowers were full of honey, I offered some seed to a woman who had once lived on Salisbury Plain, whereupon she strongly advised me not to encourage such things, alleging as a reason that her next door neighbour, by her old home, protested most strongly against the cultivation of what was then her husband's favourite flower, as she said they were very injurious to the bees; she even offered to pay her if she would discontinue to grow them. Can any one inform me further in this matter?

In your October number you had some questions and remarks about the difficulties of quelling a bee fight. I successfully dispersed the robber bees around two entrances, out of three, in one of my sheds, by lighting a small weed fire, so that the smoke blew across the front of the house. I was obilged to do this early in the morning for three successive days, but decidedly interfered with the plunderers. My own bees were soon left quiet and peaceful. The third hive in the house is very strong, and was not attacked by the robbers.

S.

POSTHUMOUS.

THE BAR AND FRAME HIVE.

When I first invented it and used the bar and frame in 1834, it was a longer than deep frame, with the guide bar formed beneath the upper part of it. The one that has succeeded best since then has been the frame made deeper than long, and which has the guide bar perfectly separate from the upper, wider, suspension part of the hive. Those who have adopted the bar and frame have made the mistake of merely introducing a square frame within the already introduced square box of the day, being thus longer than deep, and merely elongating the top piece to rest upon the edges of the box, or to fit into iron bar rests as introduced by Mr. Pettitt with the Rev. J. Scott's lengthened bars. All frames with metal slides are objectionable, except for experimental hives. The really useful wooden bar and frame is that with wooden top bar, made broad, with certain cuts for the bees to ascend, or for certain conveniences, to be mentioned hereafter. This bar and frame can be applied to any system or whim of bee masters, be it collateral (the natural direction), super, or nadir, or piling hive upon hive, or box upon box. The one great requisite is thus obtained in the bar and frame, that every separate comb can be examined, extracted, or its direction altered before it is returned to the bees, whilst every comb can be emptied of its honey, and yet left with all the impurities of pollen, larvæ, or brood intact, and each comb returned for the bees to refil the cells, &c. This bar and frame furnishes all that the bees require, gives the proper spaces for comb building, the requisite depth for honey stores above, pollen and useful honey for daily food in the middle, while the brood may be raised in the centre of each comb. The queen bee can travel all round each frame, naturally ascending on one side, and descending the other between the guide bar and the top suspension plate on each frame. The size of the frames may be regulated for the climate, and the quantity of bee pasturage; but taking the usual average of English cottage straw

hives, eight frames will suffice for one season for the formation of combs, &c. My hives produce about 14 lbs. of honey each, or three lbs. per frame pure honey, without comb and brood. These frames are in suitable boxes, made deeper than long, and have inclined boards to land upon, and to run off the wet. Complete, they are, easy to introduce swarms into, or to make artificial swarms, and afford :—

Facility for transporting the bees from place to place for pasturage.

Facility for increasing the accommodation within the box

Facility for feeding the bees and protecting them from their enemies.

Facility for extracting the honey comb, and honey from the cells.

Facility for introducing the swarms or dividing them ; or extracting the honey combs completely without smoke, or destroying a single bee, and under any system the bee master may select, nadiring, supering, or storifying, these bar frame hives can be used.

They can be made perfect as the best non-conductor of heat, and kept clean without disturbing the bees or combs. They have no dividing boards, no slides, or bottom board are required, no stands, or any extra protection in sheds or bee houses. All hives known as bar hives until 1838, like the Grecian hives, require the sides of the combs to be always detached with a knife before removal for examination or extraction, and the combs are apt to drop off the bar from the weight of the honey and brood when so lifted, especially in newly formed combs, and even the adopted bar with a frame, called a compound bar and frame, is a failure, as the comb attached to the bar will simply fall out of the frame when held on one side with any weight of honey or brood, which is a greater defect than the long or lengthy frame adopted in the American moveable comb hive. The principle of the Grecian bar consists in getting the comb from above lifted out, when separated from the sides of the hive. The principle of the bar and frame is to have each comb separate within each bar and frame firmly attached within itself and capable of being lifted out on any side the box may be made to open, without any comb cutting whatever. The solid wood bar and frames also give great facilities tor the use of the honey extractor, the most simple mode of running out the honey, free from all pollen, brood, or cut up dead bees and larvae. The external covering is a very easy matter of arrangement, and is simply made weather proof. The strength of the whole frame is secured by the make, having the one bar guide under the top piece of the large square frame, which is always deeper than long, and having wooden pins at the corners which secures them better than any glue. The top of the frame is to be well oiled to prevent the bees fixing the joints together. The lower slip of the frame is fixed on an edge to prevent the retention of dead bees or debris of the combs. This plan of the guide bar secures the short line for the construction of straight combs, and the cuts in the tops of the frames are for the use of the bees, to pass into any super, as well as to secure ventilation, &c., in the winter, when covered with an absorbing flannel or sheet.

W. AUGUSTUS MUNN.

NOTE—Want of space compels us to defer the insertion of the engraving of hive, and explanation, until next month.

CONSCIOUSNESS IN BEES.

—o—

The *British Bee Journal* must include amongst its readers many who take delight not only in studying the bee as an insect to be learnt and manipulated with a view to entertainment and profit, but who also regard it from the naturalist's and philosopher's point of view, desiring to answer by means of it and in relation to it some of those curious problems which nature is presenting to the mind of the student. Amongst these problems few can be more interesting than the one referring to the amount of sensibility and consciousness possessed by insects in general, and the wonderful honey bee in particular, because it, amongst insects, stands pre-eminent in point of utility, and has consequently received more scrutinising attention than any other.

Who has not sometimes experienced astonishment almost akin to bewilderment, as he has observed some wonderful evidence of what we call "instinct" in the hive? One is disposed to say as he watches the anxious little creatures wistfully peering into a progressing queen cell, "Surely bees are endowed with foresight, they must now be experiencing the feeling of hope, they must by anticipation be enjoying the leadership of the queen eventually to be hatched from this royal cradle."

Or noticing the fanning at the door of a hive on a hot day, the notion that the fanners are working intelligently as they toil at drawing out the carbonized oxygen, seems almost irresistible. The raising of princesses in anticipation of swarming, or when a queen has died or been lost, the building of drone comb only by a queenless colony, the determination of queens to sting none other than a regal enemy ; and the one thousand other instances of wonderful adaptation of means that every intelligent bee keeper could supply, all look so like intellect, and that of no mean order, that I feel by anticipation many of your readers will at once decide that I must be in the wrong when I endeavour to show that our pets, in common with other insects, act only mechanically, and that their movements are at best all reflex, even when they are called forth by, and even suitably applied to, circumstances that could hardly occur to bees in a natural state.

The vaguest guessing will only be gained if we strive to form our opinions from the consideration of the movements and behaviour of insects themselves ; but in the higher animals and in man we meet with movements and actions of a reflex nature (that is, that are produced by a stimulus applied to the nervous system, which reflects or throws out some movement or movements apart from the will, it may be in opposition to it) that will show us how large a proportion of our own acts are unconscious, and help us to see that the less varied movements of insects must be largely of this character, while an attentive consideration of the nervous systems of insects, as compared with those of the higher animals, will prove at least that there are strong grounds for believing the whole range of insect acts to be produced apart from consciousness and will, and that their nervous centres are merely ganglia, capable of originating purely reflex movements.

Let us then consider the subject from these two points of view :—

1st. Do men and animals perform reflex actions sufficiently adapted to their varied needs to make it credible that insects have only reflex movements?

2nd.—Do the nervous centres of insects present a conformation which would lead the comparative anatomist to think them conscious?

First. Most persons, if questioned, would be ready to assert their conviction that actions in man are all the result of will and intention, but a little investigation will prove this idea to be deeply erroneous.

Let us suppose, for the sake of argument, that we have before us a lad of powerful will, but one who, at the same time, is easily tickled. We offer to our young friend some tempting reward if he will stand firmly during one minute while submitting to our tantalization in the form of tickling.

The lad consents, and every muscle is braced while the mind determines that the prize shall be gained, and the tickling disregarded. But quickly indications of shrinking and twitching are observed, and before long the muscles move in opposition to the will of their possessor, and he fails. How can we explain this? The physiologist tells us the spinal cord becomes so irritated under the influence of these tittilations that it issues an order; which is conveyed by the nerves for the removal of the body from the influence. And contrary to the will of the lad, his body is snatched from the distressing excitation.

A burglar was in the writers own experience, discovered by sneezing during concealment.

Some foreign substance having found its way into the nose, conveyed information of its annoying presence to the spinal cord which would have immediately ordered a sneeze, if the will of the rogue had not intervened demanding silence, but the need of the sneeze caused the spinal cord to be more and more energetic in its demands, until at last the will was overborne, and the man became his own betrayer. The sneeze, let us observe, consists of a number of properly arranged movements, having for their object the ejectment of an irritation from the nasal passages. The mouth is first thrown spasmodically open, in order to admit of the fullest inflation of the lungs, after which it is involuntarily closed. The head is then raised, when the diaphragm and pectoral muscles energetically expel air from the lungs, while the head is thrown down to increase the violence of the rush of air through the nose, which is to dislodge the intruder. The whole are intelligently concerted movements, requiring the accurate contraction of a multitude of muscles, all acting in proper sequence. But where lies the intelligence? Not in the man, he is really acted upon by part of his nervous system (the cord). The intelligence is the Creator's, who has, within limits, put him under the government of a nervous system, capable of properly arranging for some of his physical needs?

To return to our first illustration, it may be objected that the titillation produces an insupportable sensation and that our friend, upon whom we are experimenting, does not act in opposition to his whole will, but only in opposition to a part of it, the desire to get rid of the nervous irritation being really stronger than the determination to gain the reward. But many cases are on record in which damage to the back has interrupted all nervous continuity between the lower limbs and the brain. The legs in these cases are perfectly paralyzed, possessing neither sensation nor voluntary movement. They might be burnt or sawn, without the knowledge of their owners, yet, if the soles of the feet be tickled, they are immediately and most violently drawn up, the muscles always so contracting as to most thoroughly remove the feet from the source of irritation. Here, then, we have apparently an intelligently concerted action, which is undeniably produced without either sensation or volition.

Slightly in anticipation of a subsequent part of this paper, let me repeat; these movements are originated by the spinal cord, which in character represents the whole of the nervous system of bees. And that as in the higher animals, the instinctive movements or reflex actions flowing from the cord are all exactly adapted to an end, while they are often produced without, and never necessarily involve consciousness or volition, so in bees intelligence is apparent, not real, since they have no nervous system capable of intelligence or sensation, but only that answering to the spinal cord of man, which is capable of producing apparently intelligent action apart from consciousness or volition.

To enforce this idea more strongly, illustrations are not wanting in the experiments of physiologists.

Huxley speaks of a pithed frog, *i.e.*, a frog deprived of its brain, or in other words reduced to the condition of an insect, so far as its nervous system was concerned, having only the extended ganglionic mass, the spinal cord remaining, which, when some acetic acid was placed upon its side, raised the adjacent foot and rubbed off the cause of irritation. The creature was, of course, perfectly void of consciousness, and so experienced no annoyance; the foot acting under order from the cord. This foot was now cut off, and more acetic acid placed upon the same spot, when, after some awkward struggling, the foot from the opposite side was brought to bear upon the part, and the acetic acid again removed.

Here we have an illustration of circuitous and unnatural adaptation without intelligence or sensation.

The sucking of the young animal is purely reflex, yet how beautifully adapted. The cavity of the mouth is reduced, and then the muscles of the cheeks stiffened, and the tongue retracted, so as to produce a partial vacuum. The arrangement is that of the common suction pump, and we must suppose the young calf to be a born philosopher if we impart any element of intelligence into the act under consideration. Babes have been born without a sensorium, and yet these have lived some while, and sucked as well as perfect children.

Acts that are in any way the result of will are not stereotyped, and repetition leads to improvement in their performance. Here we have the clue to the distinction between instinct and reason. They are not stereotyped, because will presupposes choice, and choice involves possible variation.

When an act of will is first performed, it emanates

from the brain, more exactly the cerebrum, but the brain acts immediately, giving its order to the spinal cord, which in turn acts through the nerve fibres in the muscles. If the same act be often repeated, the cord the more readily orders the nerve fibre, without the intervention of the cerebrum, and hence progress and increased facility. An illustration will make this clear. A student of the piano at the beginning has to look at each note, call to mind to what it answers on the instrument, and then with care to bring the finger upon it. All this originates in the cerebrum, but passes through the cord to the nerves, producing the movements. But by degrees the sight of the note, without thought, gives the correct movement for its production, and at last the player is able to read and execute a rapid piece full of chords, with so little effort as to enjoy at the same time a conversation with a friend. The numerous muscles of the hands and arms performing most complex movements with the utmost exactitude.

The eyes are moved backwards and forwards to meet the right portion of the music page, while the brain is left free for the chatting. Because all this flow from the educated spinal cord, even almost without consciousness.

Each bee builds her first waxen cell as accurately as the last, because she begins where we leave off.

She was hatched with her nervous cord or ganglia, embued by hereditary transmission, with the power of initiating the movements necessary to the elaboration of the perfect cells. Her powers are incapable of improvement, because the cerebrum which in higher animals acts as the instructor of the cord, is absent. Some may think that this theory would detract from the interest of bee keeping, but surely that is an error. If we have adaptation, there must be an adapter. The foresight we must trace in the bee exists most truly; but it is not the bees by right, it is the Creator's, who has impressed upon it an undeviating line of action which at each point of its course strikes us as full of harmony and beauty. Surely this view of it can be no less interesting or elevating that the one more generally entertained. The writer saw some months ago a potato that had been shut in a dark shed, having a hole in the wall of it some two feet from the tuber, from which had proceeded a shoot which taking a straight course for the light along the floor, and then creeping up my means of the wall, was fast gaining the hole. This looks like intelligence in the potato. But though all will perhaps agree that the potato opened its eye, few would admit that it saw the light, and so made an effort to put its shoot towards it. Botanists know that plants form long cells in the dark, and shorter ones as the light is greater, and this law (how impressed upon vegetation by the Creator we know not) is in itself capable of explaining every growth of plants towards light.

Equally unknown to us is the law by which bees are made to follow out their instincts, but we are surely wrong if we imagine them to be acting from intelligence, will, or choice.

Theory may be a source of enjoyment, but here it is also utilitarian. We learn that instinctive peculiarities are inherited. If the apiarian be wise, he will never seek to perpetuate a stock through a queen of its own raising, if it has shown want of energy in circumstances where others have been industrious; or has given reason for supposing that its head has not at least average breeding power, for a bee is what it was in the egg, and so must it ever remain.

Nature indeed is pursuing this policy. The greatest breeding power, accompanied with the greatest energy must give the largest and most frequent swarms, while loss of vitality, without artificial bolstering, is but the forerunner of extinction.

From all that has been adduced, may we not consider our starting proposition as proved, viz., that men and animals perform reflex actions, sufficiently adapted to their varied needs to make it credible that insects have only reflex movements?

F. CHESHIRE.

(To be continued).

PACKING BEES.

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While responding to the request made by the late W. A. Munn, I cannot allow the melancholy event of his death to pass unheeded. We have lost a valuable correspondent, but while we regret the change, we may also rejoice, for though dead he still speaketh, as from the grave, reminding us that we must soon follow, and giving renewed evidence that this earth is not our abiding place. Seeing then that he is the first of the writers to the Journal over whom the grave has closed, let us sympathise with his mourning relatives and friends, and while we appreciate the writings he has so kindly given in it, let us foster the good feeling he has exhibited, and prove to the world that it is a medium where bee matters are discussed in a kindly way, and information on sound principles is given and that it will only be when any one is detected carrying off what does not belong to him, that stinging will be allowed.

I am afraid that I shall not be able to suggest to your readers a satisfactory plan for the removal of bees to long distances, as I have had little experience beyond sending my own bees to the heather.

Nevertheless, there may be something that is new in that. There is one plan which I will not recommend, (however good it may be when stocks are sent 300 or 400 miles) which is that of inverting them. In sending bees to the heather, it is necessary to have them fully equipped, not only for their journey, but for the honey harvest when they arrive at their destination, and this must be done before leaving home, as there are few conveniences at the heather. With the exception of stocks with newly-made combs which require more air than others, the plans are the same with all hives. In preparing the bees for the heather, I always give them empty boxes containing the same amount of space as is contained in those they then occupy, and always take the precaution of shutting up the original entrance (a precaution highly necessary, as bees naturally crowd towards their doorway, and many die) and ventilating from the underside and sides of the floor board, constructed for that purpose. (Mr. Anderson, of Dalry, Ayrshire, has zinc raises well adapted for ventilation). I then draw every slide of the stock hive, so that the bees may get into the space provided, and raise the cover of the super about three sixteenths of an inch, inserting wedges of

about that thickness, and screw all firmly together in their places. This plan I consider better than removing the crown boards, or slides, and placing perforated zinc over the openings.

In the former case the air has free circulation up and through the boxes, and the bees have increased space, yet neither rain nor sea spray can get in, nor is the heat of the sun so sore upon them as when they are exposed on the top with nothing but the zinc close to the bees, and moreover they are not liable to get smothered if any material be thrown on the top of them.

This is all the precaution I ever take, beyond taking care that the hives do not receive sudden jarring, and that they are securely fixed in all their parts. I fasten the boxes and the floor board one to the other, as the case may be, with straps of iron about two and half or three inches long, with a hole in each end of them, through which are driven wire staples, and pins keep all rigid. This is exactly how I always send my bees to the heather, and my success in having no breakdowns is evidence that the plan is a good one. I have often carried them by road, rail, or steamer, about a hundred miles, so that they have had a pretty long confinement. But to send a swarm of bees 400 or 500 miles is a different matter, as without combs, bees are much more difficult to manage, and are in more danger of being smothered than those with combs, but in order to make up for the deficiency I would take the branch of a tree, say the top of a spruce fir, cut it the exact length to go half an inch in the floor board, and the same distance into the crown (to steady it so that it shall not fall) so that the bees may have footing amongst the branches. A piece of old honey comb can be placed on the top of the hive, or suspended in a frame, and over this a shallow box ventilated as before described. This, with ample ventilation below, is sufficient for a very long journey. To prepare, however, a hive of bees with sufficient meat and water for a six months journey to our Antipodes, is a very different affair, and requires description from one having more experience than

A LANARKSHIRE BEE KEEPER.

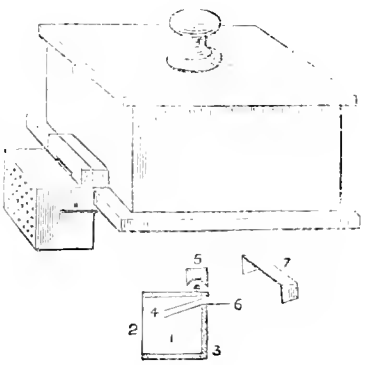
ASTON'S DRONE TRAP.

I send herewith a sketch of my drone trap, as exhibited at the Manchester Show, where it was awarded an extra prize. It is illustrated as fixed to a Woodbury hive, but is equally applicable to a straw skep, it being only necessary to alter the shape of the zinc bridge (fig. 7) to make it fit the front of it, which may be easily done with an old pair of scissors. Writing in the *Journal of Horticulture*, September 18th last, Mr. Pettigrew says:—"Mr. Aston, of Newport Salop, exhibited some of his simple and useful drone traps, and other bee furniture. The judges awarded him a prize of 20s. for his traps, &c. I bought a drone trap of him, and have tried it already, and I am glad to say it answers well. Bee keepers must thank Mr. Aston for his excellent contrivance."

I have to thank you, Mr. Editor, for the suggestion some time back, pointing out how my bee trap might be converted into a drone trap, for which it will answer, but there is this drawback, when the hive is raised, as suggested by you, that the drones will not readily pass the fall trap, but create such a commotion at the other openings, as throws the sentinels quite off their guard, encouraging robber bees, as exemplified by your correspondent of last month, who has made his own trap on the fall principle.

In mine there are no falls, for I find that when they are used, the drones in their endeavour to return to the hive, partially block them, and thereby impede the passage of other victims.

My trap may be left on as long as is desirable, or until filled, it offers no hindrance to the worker bees, and should the queen stray into it, she would have to stay there until released by her owner, so the drone trap is really of considerable importance as a useful adjunct to the non-swarming principle, as by its use swarming may be in a very great degree controlled. The engraving shows the trap fixed to a Woodbury Hive, &c.



No 1 is a sectional view of drone trap, 2 is the perforated zinc front, which permits the passage of the worker bees only, 3 is an opening left at back to place before a bee trap when fixed to a super, to catch its drones, 4 is the glass tube, down which the drones march freely into the cage, but cannot find their way back again, 5 is a contrivance through which the worker bees can pass, as ordinarily, but it has a strip of wood along its centre, which darkens the way, and renders it less attractive than it otherwise would be to the drones. Fig. 7 is the zinc bridge, which may be made to fit hives of circular shape, yet when reversed would be equally serviceable for plane fronted hives. The trap is fixed to the hive by the piece of zinc, No. 6, which is screwed to the floor board, and is supported either by a block resting on the ground, or, as indicated in the engraving, by two light strips of wood which are thrust under the floor board, and catch two nails or pins in its sides.

R. ASTON.

A WORD FOR THE OLD SKEP.

DEAR SIR,—I have been longing to find time to write a few words for your journal, in the first place that I may take the opportunity of bearing testimony to the ready and obliging manner in which you have answered my many queries, and also to say something

in favour of a system of bee keeping upon which we are inclined too much to look with contempt.

Thanks to you and to your good instructions, nearly all my bees are now doing well, in bar frame hives, and I am able to manipulate them without gloves, so that I fully think that straw hives will shortly disappear from my apiary, but still I have much to say for the old skep.

Although at best it is but an imperfect habitation for the domesticated bee, because it fails to afford us the opportunity of attending to the wants of its inmates, yet I believe that in its most improved form it is the hive of all others which is best calculated to extend an enlightened system of bee keeping, amongst those who hitherto have been, and still should be bee keepers, I mean the simple and humble cottagers of our country.

The reason of this is plain : - It is inexpensive, and thus within the reach of the cottager, and it is comparatively easy to manage.

I must say that I believe a very great benefit has been conferred upon us by the efforts of the late Mr. J. W. Pagden to introduce his system of bee keeping, amongst the many. He could not, perhaps, lay claim to much that was new or original in his system, but what he did was this, he gave us in a short and clearly worded little manual, directions for carrying out the leading principles of successful bee keeping, and he recommended such hives and apparatus as were within the reach of the poor man, for surely it is unmeaning to call a hive which may cost a sovereign or even two " a cottage hive."

When I first began to keep bees I was attracted by the honeyed words of a hive. "Manufacturing quack." I bought his bar frame hive and had several made upon the same model, but great and grievous were my failures. My attention was then drawn to Mr. Pagden's little book " £70 a year, how I make it by my Bees," and the tide of success soon turned in my favour. For a beginner I was very rash, and tried many wild schemes, but several of my stocks, which have flourished and succeeded well, were the bees which cottagers allowed me to drive in August, from those hives which had been destined to the sulphur pit, and which I established by feeding, according to the directions given in Mr. Pagden's little book.

The main points which he recommends are spring and summer feeding, how and when to do it, simple methods of supering and nadiring, making artificial swarms, depriving by driving or smoke, but the chief feature is the cost of the hive itself, only one and ninepence, and the rest of the furniture still cheaper and easily manufactured by anyone who is at all handy with his fingers.

I cannot but express the opinion that if you want to teach the cottager an improved system of bee management, the best way is to feed him with the improved skep system—" the milk " of bee science—and when he has thoroughly digested that, then go on to the bar frame, "the stronger food."

I would give him one of Mr. Pagden's books, and recommend him to use a flat topped skep, with the much abused, yet practically useful round hole, and advise him to follow the other simple directions contained in the little book. I am thoroughly convinced that until his eyes have been partly opened by success in the better management of the cheaper skep, he will never take to the bar frame hive, which costs as many shillings as the skep does pence.

I must apologise for trespassing so far on your space, and again thank you for your valuable instructions.

If you think this worthy of insertion I should prefer it appearing in my own name, as I think that the more bee keepers become acquainted with one another, the better it will be for the science. I shall be very ready to join in any scheme for bringing about the spring meeting at the Crystal Palace, if I can be of any use. I think the furniture show would be most profitable for our instruction and with your permission would myself exhibit a hive fitted up according to my own fancies, but of which I may say the whole principle is derived from you.

I repeat I shall be glad in every way to help forward the proposed meeting, and if funds are wanted, am ready to subscribe thereto.

H. BLIGH.

Nettlebed Vicarage, Henley-on-Thames.

P.S.—The last 14 lines formed part of a private letter to the editor, but they are so much to the point with respect to matters of present interest to bee keepers, that with the writers permission, we append them. ED.

A BEGINNER.

—o—

DEAR SIR,—I am now able to report the completion of my bee enterprise. Your very clearly expressed advice allowed me (who had never touched a bee before) to drive five broods of bees out of straw skeps into two Woodbury hives, then to take them to a place about a mile off, and there to introduce two Ligurian queens which I had received from you. Two days after the latter operation I opened the hives, and found that in each case queen cells were being formed. These I cut away and let loose the new queens. I am happy to say that, two days having elapsed, on re-opening the hives yesterday I found the queens walking happily among their subjects. The operation of inserting one of the Ligurians gave me no little anxiety, for, although I had found the old queen within a quarter of an hour on one occasion, this time I was more than four hours looking for her, and never found her. It was on a cold, bleak day, and I concluded that somehow her majesty had dropped off a comb. However, I took my chance, and inserted a new queen, the raising of queen cells proving to me that the bees had really lost her. Now I think I shall do well, and have a pure breed of Ligurians. I hope to hear something more of the hive of the future, and of the Bee Guild. Ours is almost the only country not possessing a Bee Society for the diffusion of information about bees and their economical management. Allow me to thank you for your courtesy and the prompt attention you have paid to my wants.

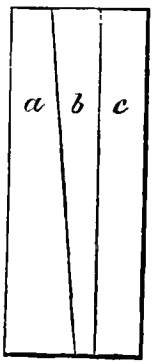
I. S. A. H.

HIVE IMPROVEMENT.

——oo——

SIR,—Having been endeavouring to adapt the improvements in the hive of the future, suggested in the Bee Journal, to one of my bar frame hives, I venture to send you my experience, hoping it may be of some use to others.

The hive in question is one of Neighbour's, and in it the ends of the frames rested in notches cut in a plate of zinc; this plan prevents propolising, but the divisions stop all lateral movement. My first care was to cut away these, and also the pegs at bottom, between which the frames drop, thereby giving free lateral movement; next I fitted to the upper angles of the frames the metal corners, described at page 69 of the Journal, using those intended for the lower angles, (fig. 4) as in my case the projecting ends of fig. 2 would have been of no use; next the bottom bars were removed by carefully drawing the mortices, so as to render it possible to replace them if found desirable. A thin 1-inch screw was now inserted at the top and bottom of each frame-end on one side only, to such a depth as by bearing against the next frame to preserve the correct distance between them. These screws are most successful, and easy of application, they keep the frames delightfully steady both at bottom and top, it is almost impossible to propolize them, (a misfortune which I fear, sir, might happen to the projecting shoulders of your frame) and in the event of any change of distance being desirable, the object is easily attained by a few turns of the screws. Of course one of the end frames would have screws on both sides to keep it from the side of the hive.



Now for the consideration of the wedge-shaped side pieces, suggested at pages 70 and 98 of the Journal, and it occurred to me that it would be a much better arrangement to have *two* moveable side pieces between the wall of the hive and the frames; the removal of the outer one could be effected without the possibility of crushing a bee, and would of course at once release the inner one and the frames. If the side of the hive be sloping, only the outer one, *b*, would require to be wedge-shaped, thus *a*, side of hive, *b*, outer side piece, and *c* inner side piece; but if the side of the hive be upright, both the moveable pieces might with advantage be so in a slight degree, when *c* would represent the side of the hive, *a* the inner side piece, and *b* the outer side piece as before. If the ends of the hive be sloped as well as the sides, the ends of the side pieces must also be sloped, which would have the advantage of retaining them in their places, in the event of the hive being removed without its floor board, which in any case the side pieces should touch, to prevent bees from crawling under and between them. I hope this suggestion may meet with your approval.

H. JENNER FUST, JUNR.,

Morton Grange, Thornbury, Gloucestershire.

In the first case the engraving represents the western side of a hive, and in the second the eastern, looking at it from the south. ED.

SUPERSTITIONS.

——o——

DEAR SIR,—At a meeting of the Wiltshire Archæological Society, recently held at Swindon, the Rev. A. C. Smith read a paper on "Certain Wiltshire traditions, charms, and superstitions," and in illustrating the latter he gave the following amusing incident:—"There is scarcely any subject about which our people are more superstitious than about bees. These are in many cases the only live creatures they keep, so to them they confide their joys and sorrows, going out to whisper to them immediate intelligence of a birth, a death, or a wedding in the family. Moreover, observing their wonderful sagacity, they regard them with something akin to awe, and nothing will persuade them to do what the bees would not approve." As an instance in point:—"About twenty years ago I was awaiting the arrival of a friend by stage coach at Beckhampton, in early spring, when, seeing a long row of bee hives, and being desirous of procuring some early swarms, I made a proposal to the owner to sell me some; when the good woman replied that though she had more than she wanted, she would not do so on any account, for 'The bees did not like it, and it was most unlucky to sell them.' Of course I began to argue with her that this was mere delusion on her part, but she cut me short by saying that on one occasion she had been so persuaded, and had promised her first swarm to a gentleman for 10s., and 'if you'll believe it, sir,' she continued, 'my first swarm came out and pitched on a dead hedge, which you know is very unlucky.' 'Well,' said I, 'If that was all, the harm that came of it, it was no great matter.' 'No' she replied, 'But that same year, and very soon after, too, my little boy died!' After this there was no more to be said, for nothing would ever convince that woman and probably most of her neighbours, but that parting with her bees for money was the real cause of her child's death, foreshadowed too, as it was, by their settling on the dead hedge. I will add, lest any of my audience to-day should entertain similar qualms of conscience, and be beset with similar terrors from the sale or purchase of bees, that since that time I have purchased many a swarm, and am still, as I have been for 20 years, a rather extensive bee master, but that I have never experienced any calamity beyond an occasional sting from offending my bees." I forward the above thinking it will interest the readers of the Journal.

S. K.

Stroud.

WHAT MAY BE DONE WITH A CAST.

On the 27th July, 1872, a hive of mine that had sent out a swarm on the 16th of the previous month send out a cast, the merest handful of bees, so poor looking indeed as to seem valueless.

In our neighbourhood the honey harvest may be considered at an end in the last week of July, so that if left to themselves, had the bees composing the cast been twenty times as numerous, all must have starved, so I determined to see what good feeding would do for my little colony.

First I transferred the cast to a Woodbury hive, taking care that one of the frames was full of honey comb and honey while three other frames had comb worked in them, although not containing anything in the cells, and in addition to these precautionary measures, I commenced to feed my bees, doing so until November 10th, when I removed the feeder, having given in all 25lbs. 8 oz.

When I ceased feeding I carefully looked over the contents of the hive and found five frames, in addition to the one presented by me to the cast, on the first start off in the world, well filled with nothing in appearance differing from the usual production of bees in the honey season, while the cast had so much increased in strength that its scanty antecedent would not have been suspected by any one seeing it for the first time. The four empty frames I removed, killed three spiders which had taken up winter quarters in the unoccupied frames, and carefully covered the hive over.

In April last I replaced the four empty frames, which the bees quickly set to work to fill, and in May I was encouraged to try them with a large super, capable of containing nearly 50lbs. of honey.

Although my expectations were not fully gratified I yet had no reason to complain, for on removing the super in August, I found in it a nett weight of 30lbs. 6oz. of honey.

C. H. HODGSON,

Erith.

THE USE OF DRONES.

DEAR SIR,—I hope you are well and that the Journal is prosperous. You sometime since invited your readers to discuss "the use of drones" in hives, and I therefore shortly give my idea on the subject.

My opinion is that drones are of great assistance in honey producing, not that I mean to say they go out and gather it, but they stay at home in the hive during the cooler hours of the morning and evening, and thus enable the whole of the working bees to go forth to their pleasant labour when honey is richest and most plentiful, and not until the honey yield has slackened, and the heat of the hive can be kept up without them, do they make their appearance with the young bees, for their mid-day airing flight. By this dispensation with young bees as nurses, and drones as heat producers, the working population can be spared during all the working hours of the day. I had hoped some of your great bee masters would have taken up the subject ere this, as I am not at all willing to begin so important a discussion.

Many people, however, seem to think that drones have no better use than to be trapped; this argues a mistake in "Nature."

J. ARMSTRONG.

Stirlingshire.

NOTICES TO CORRESPONDENTS AND ENQUIRERS.

HILL VIEW.—As your straw skep and its contents weigh only 10 pounds, and there are not more than two quarts of bees, they must evidently be in great danger of starvation, (see our article "What to do, &c.") The protection you have given is good, but would be much better if the interspace were filled up with hay, or some other non-conducting material. Instead of leaving the skep on its stand, and supering it with a Woodbury hive, it would be much better (if your bees survive) to nadir it in spring, with a four inch ring of the same size, and by stimulative feeding, to promote early breeding, and thus procure a large swarm for your bar frame hive.

E. RUGBY.—The best book on bee culture in the English language is *Langstroth on the Hive and Honey Bee.* It is an American work, published by Trubner, Paternoster Row, price 12s., but may be had, as advertised in the Journal, 10s. 6d. post free. The proper time to deprive bees of their honey is when the honey harvest slackens, but as that happens at different times according to circumstances, no date can be fixed that would suit all seasons or localities. The best guide is when the bees begin to remove the honey from the unsealed cells in their supers, which may easily be known by observation. When it is necessary to remove stands of bees from one part of a garden to another, should the distance be only a few feet, they may be moved bodily a few inches on every fine day when bees are flying, but if the distance would make this mode of removal too tedious, or other obstacles prevent its adoption, they should be sent to a distant locality for a few weeks, either until they have forgotten their old position, or have ceased to fly abroad. At the fall of the leaf is a good time to make this kind of change, as when all have fallen, the aspect of the garden will be altered in a great degree, and on their return, they will not so easily recognize it. Their sudden removal to a distance of only a few yards may cause considerable loss, if the weather permits them to fly abroad, but during mid-winter, when they simply take airing flights for cleansing purposes, and do not leave the immediate vicinity of their hives, they may be moved from 50 to 60 yards with comparative impunity. It is, however, always best to give them a few weeks probation elsewhere, as above advised. We make no charges whatever to subscribers for any information given by post or otherwise. We thank you for the P.O.O. for your subscription, and wish all others were equally prompt.

N.B.—A number of letters, queries, and replies are unavoidably left out through want of space, but shall appear in our next number. ED.

SCALE OF CHARGES FOR ADVERTISEMENTS.

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	£	s.	d.
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Per line afterwards	0	0	6
,, Inch of Space	0	5	0
,, Quarter column	0	10	6
,, Half ditto, or quarter page	1	0	0
,, Column, or half page	1	15	0
,, Full page	3	3	0

No Advertisements can be received after the 20th of each month.

THE

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AND BEE KEEPER'S ADVISER.

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[ENTERED AT STATIONERS HALL.]

[No. 9. Vol. 1.] JANUARY, 1874. [Published Monthly.]

DIRECTIONS TO CORRESPONDENTS & QUERISTS.

1.—Write in a legible hand on one side of the paper only.

2.—Use no abbreviations which are not to appear in print.

3.—Keep every query distinct and separate, and give the fullest possible particulars, stating also the kind of hive used.

4.—When requiring an immediate reply, send a stamped ADDRESSED *envelope, or stamps for cost of telegram.*

The British Bee Journal.

JANUARY, 1874.

We have the greatest pleasure in informing our bee keeping brethren that the proposed meeting of bee keepers, the exhibition of bee produce and bee furniture, and the establishment of a honey market at the Crystal Palace, have met with most direct encouragement at the hands of the managers of that favourite place of public resort. Our application in the first instance appears to have miscarried and was lost, but a renewal of the same elicited from the obliging secretary a most encouraging reply. Enclosing a list of the shows already arranged for the ensuing year, (a copy of which will be found in our advertisement pages) he suggested that as so much valuable time had been unavoidably lost, our first meeting should take place on the occasion of the Great Flower Show to be held on the 16th of May next. We replied that by that time hives will have been purchased, bees will be active, and bee keepers busy, and that under the circumstances it would be better to postpone the whole affair until the Grand Autumn Fruit and Flower Show, which is announced for the 8th, 9th, and 10th of September next, and this suggestion the manager of the department has most kindly and liberally acceded to

Apiculturists have, under the terms of this concession, an opportunity such as has never before been offered, for advancing the interests of their delightful and profitable pursuit, and we sincerely hope that it will be duly appreciated, and turned to the best possible account.

The Great Hive, England, teeming with Workers, safe in the enjoyment of prosperity and peace, under the rule of a beloved Queen, is the only important honey yielding country which has not a National Association for promoting the culture of bees, those

> "Creatures, that, by a rule in nature, teach
> "The art of order to a peopled Kingdom."

Apiculture is highly esteemed in England for the valuable lessons which it teaches, and for the pleasure and profit which invariably rewards the care and attention of its votaries. It is essentially a rustic pursuit, easily followed by the most humble in the land, yet is not unworthy the patronage of Kings, for its teachings, nevertheless, as a science it languisheth, through the absence of an organized central directing and governing power, but this want we sincerely trust will shortly be supplied. We hope to see a National Society established to promote the culture of bees, by every available means, not hampered by prejudice, but recognising every kind of hive and system in use and giving their certificates of merit wherever they may be justly due.

The communication from the secretary at the Crystal Palace, reached us on the 28th ult., and at so late an hour we can neither afford time nor space to do justice to the merits of such an association as that hoped for, but proceed at once to lay before our

readers the terms on which a meeting of Bee Keepers and a Grand Exhibition of Bees, Bee Hives, Bee Furniture, and Bee produce, may be held.

They may take place on the occasion of the Sept. Fruit and Flower Show, the Crystal Palace Company will provide space, and put up tables on the same floor and as close to the fruit and flower show as possible. Free admission will be granted to all concerned in the exhibition, including the exhibitors. The entry fees are to belong to the promoters of the exhibition, and it is hoped they will defray expenses. The Secretary, Mr. F. W. Wilson, says, "I will do all in my power to assist you to make the meeting of bee keepers a success," and suggests that a schedule of prizes to be competed for, be published forthwith, and expresses an opinion that we "shall get a good sum for entries if the rules are clearly made out by which the competitors are to be guided." We think, however, the number of entries will be governed by the amount of the fees demanded, and by the value of the prizes given, the former we hope will be as little, and the latter as great as possible.

We now respectfully invite the opinions, advice, and assistance of all persons interested in bee culture, in furtherance of this most desirable object. It is evident that the exhibition will partake largely of the character of a honey fair, where those "entering" as exhibitors will be accorded all the privileges of visitors without incurring additional charges, and will find a "market" for their wares into the bargain.

The thing now required by the Secretary is a schedule of prizes, and in aid of this, we would remind the friends of apiculture that "he that gives quickly, gives twice." We are confident that a full prize list will go far to make the meeting a success, and the more "quickly" it is announced the greater the success will be.

Our first list of subscriptions promised is a short one, but is we trust sufficient to show the spirit that animates the movement, and we appeal to beekeepers individually, and all others interested, to help us to increase it:—

Hon. and Rev. Henry Bligh	1	1	0
S. Holman, Esq	2	2	
Editor *British Bee Journal*	5	5	0
S. G. Litteljohn, Esq	1	1	0
R. Symington, Esq	2	2	0
Mr. W. Abbott	1	1	0
C. Atlee, Esq.	2	2	0
C. W. Smith, Esq.	1	1	0
Mr. J. E. Acworth	1	1	0
	£16	16	0

Commending the Rules of the "Danish National" and the "Buxton Local Bee Clubs" to the consideration of our readers, and hoping to see the prize fund of the proposed exhibition largely increased, we respectfully and cordially wish all our contributors, subscribers, and friends, A HAPPY NEW YEAR.

RULES OF THE DANISH SOCIETY OF APICULTURE.

OBJECTS, RULES, &C.

1.—The Society endeavours by means of Lectures, Discussion Meetings, the circulation of the most suitable books, and of *its Journal*, also by sending out qualified teachers, as well as by the exhibition and circulation of all tools and requisites, to spread a knowledge of the best possible method of keeping bees, and of the most profitable use and disposition of bee productions.

As soon as the Society's means will permit, model apiaries shall be established, in which everything that is new in bee culture shall be thoroughly tested, and the results made known to the members.

Furthermore the society shall establish a library on bee keeping to lend amongst the members, and also a museum of patterns and models of all the various kinds of bee furniture.

LODGES.

2.—Members may by their own desire form local lodges, provided that each lodge so formed shall number not less than five members; the lodge to be called after the name of the town or district in which it is formed. Every lodge shall elect its own foreman (or president) for one year, who shall send to the central society reports of all the business transacted from time to time, and shall collect and send to the cashier the amounts due from members to the society. Every lodge is entitled to elect one director to the central society out of every five of its members, and may make a new election for every meeting of the directors. Three days notice shall be given of every lodge meeting for any purpose, which may be called by one of its directors, its foreman, or by five of its members. Subject to the foregoing, the management of each lodge is left to the discretion of its members.

MEMBERS' CONTRIBUTIONS AND RIGHTS.

3.—Each member must contribute at least 1s. 1½d. per annum, in advance, and if in any year a member is four weeks in arrear, he forfeits all his rights and privileges as such, and remains no longer on the society's books.

The society includes ladies as well as gentlemen among its members, the qualification being that they be of good reputation as friends to bee keeping, and that they make their application in writing, to either a director, or lodge foreman. Exchanging from one lodge to another is permitted, on written notice being given as before; by the same means also withdrawal from the society may be at any time made.

Members may be expelled by the directors in meeting convened.

DIRECTION.

4.—The directors elected by the lodges are the governing body in all the affairs of the society. They elect a president, vice-president, a secretary, and a treasurer, not necessarily out of their own body; and each one so elected becomes (*ex-officio*) a director.

The directors meet once a year at least in autumn, but meetings may be called at any time by the president or five directors, fourteen clear days notice being given to every lodge, to enable them to nominate their new director.

At each autumnal meeting one of the three chief officers retires, viz., the first year the vice-president, next the secretary, and third the president, but as will be perceived, they each afterwards hold office for three years.

Propositions to alter rules cannot be considered unless they be fully set forth on the notice calling the meeting of directors. Should such a proposition emanate from a lodge member, a months notice must be given to the president prior to the meeting at which the question is to be discussed.

The directors must as far as possible, before they decide any propositions of importance, give the lodges full time to consider them.

The decisions of the directors are final, without reference to the votes of lodge members. All questions are decided by a majority of votes, excepting such as involve the alteration of rules, when a majority of two thirds of those present is necessary.

OFFICERS' DUTIES.

The president takes the chair at all directors meetings, leads the working, examines the accounts and cash, and closes the meetings when business is over.

The vice-president takes the presidents position and duties in his absence.

The secretary, by order of the president, transacts the business of the society concerning the cash, accounts, library, archives, museum, collection, and all the society's property, and must, when he makes his annual report, make also a correct inventory of the society's effects. He must record all the proceedings at both special and ordinary meetings of the directors, and subject to the approval of the president, prepare reports for publication and circulation among the members.

ORDINARY MEETINGS OF THE SOCIETY.

Once in a year at least, an ordinary meeting is held in autumn, (in a different town or district each year), at which there may be exhibitions of bee gear and furniture, with or without an offer of premiums, as the directors may determine.

A non-member may be introduced at an ordinary meeting, once only, he may also join in a discussion, but may not vote

The local exhibitions are under the special control of the directors, who may vary the rules to meet each particular object.

THE JOURNAL.

The society publishes a Journal which is the property of the members, in which is recorded all that relates to the society and its officers.

Members may contribute articles on bee culture, or *advertise* on payment of an amount to be decided by the directors, so that the society shall not lose by their advertisements.

PERMANENT BYE-LAWS.

Lodges may call meetings by advertisement in their local newspapers, when it is deemed necessary to do so, they are also urged to give reports to such papers, and copies of the society's Journal gratis.

The income which the lodges and the society receive from donors or others is divided at the discretion of the directors among the lodges and the society, at their option.

The society pays for the carriage of all models, &c., sent to the respective lodges. The directors decide the route, and desire the lodges to make use of the models.

Lodges that receive large donations must on no account devote more than 50 per cent. to their own advancement, the remaining moiety must be forwarded to the treasurer of the society.

Herewith are appended the rules, &c., of the Buxton Bee Club (Norfolk), which was called into existence in 1867, by the Rev. W. J. Stracey, the rctor

of that place, and which we hope will serve as a guide to the formation of many similar local organizations having the same laudable object. The Rev. rector, in a preliminary address, expressed a feeling that cottagers miss a great benefit by not keeping bees on the humane, *i.e.*, "The depriving" system, by which the stocks are never destroyed, but are always increasing, and only the surplus honey is taken away.

"In some parts of England the cottage rents are mainly paid by bee keeping."

One writer states that "in some parts of Europe 2,000 hives thrive to one square mile of acreage. It has been estimated that, on an average, every acre will produce one pound of honey. Shall we suffer this enormous loss of the gifts of a beneficent creator, without an effort to secure to ourselves so valuable and vast a treasure? All that is necessary is sufficient encouragement and knowledge of the subject. An area of a few square miles in the writer's vicinity, has in some favourable seasons furnished to market over 20,000 lbs. surplus honey."

The rev. gentleman continued that as the chief expense of bee keeping is at first starting, he proposed to establish, on the 1st of August, up to the 1st of May, 1868, inclusive, a club, on the principle of clothing clubs, to be called "The Buxton Bee Club," subject to the following rules, &c.:—

"1.—One member in every cottage in Buxton may become a subscriber.

2.—The subscription must be in no case less than 3d. per week, but may be to any greater amount.

3.—Every subscription must be paid regularly at 10 a.m. on the first Monday in every month at the Vicarage.

4.—A bonus or gift of 5s. will be added to every subscription which has been regularly paid, on the 1st of May next; and more than 5s. if donations to the fund are received from any quarter.

5.—Any subscriber may have his money returned to him in full on any subscription day, if he wishes it.

6.—The money thus subscribed will be expended on hives, or other useful articles for bee keeping, on "The depriving system" alone, selected by the subscriber, and the balance, if any, will afterwards be paid over to him towards the purchase of bees.

7.—All orders for hives, &c., must thus be made through the Rev. W. J. Stracey, who only wishes, in undertaking this, to help the labourers in the parish to a sure source of interest and profit.

There will be an exhibition of hives, &c., &c., in the National School during August, from Mr. Neighbour's 149, Regent Street."

HIVES.

As intimated on page 117, our proposed hive will be made of pine, of as nearly eleven inches in depth as the boards may happen to be, and consequently it will be about two inches deeper than the present Woodbury hive. We do not expect that it will be of a pattern which will suit the fancies of all bee keepers, for it is evident that if apiarians, the most successful each in his particular way, cannot agree as to the relative merits of the respective *systems* adopted by them, it can scarcely be hoped that all will agree to the adoption of a hive of any particular length, breadth, or depth, nor to the size or number of the frames it may contain. We shall therefore content ourselves by making a hive which, while it will be generally useful as a stock hive, capable of modification to any extent, will contain several new and important aids to manipulation, which will we think, be worthy of adoption by all makers of hives on the bar frame moveable comb principle.

The Woodbury hive in its present form contains ten vertical bar frames, each of which occupies (with its proportion of interspace), a tenth part of the hive; the hive may therefore be said to be divided into ten vertical sections, each of which has an area of 14½ inches by nine, or a gross superfices of 130½ square inches. The Woodbury frame has an internal area of 13 inches by 7¼, shewing a superfices of only 94¼ square inches, but the comb actually built within this frame seldom extends in area 12½ inches by 6¾, or a total superfices of only 84 square inches. Thus there is a loss of space in each section of the hive of 46½ square inches, or a total loss of 465 out of a possible 1,305 inches, which is the total sectional area of the whole hive. That some of this loss is not actual waste we are quite willing to admit, as a portion of the space is occupied by the frames themselves, but a great portion of it is worse than wasted, as it is so disposed as to be positively injurious to the bees, as shewn on pages 37, 51, 83, and 99.

By adapting our suggested improvements to the frames of such a hive, the gain of comb space and actual comb will largely increase its utility, and make it a far better receptacle for bees, as from having little or no waste space in any part of it, there will be less unnecessary circulation of air, and consequently less

loss of heat and vitality. The comb building area will contain a superfices of 114 square inches at least, as compared to 94½ as at present, while the comb actually built within that area will be on an average about 104 inches, as compared with 84, shewing an improvement in the utilisation of space equivalent to the introduction of 8,000 additional cells to the combs.

The total *cubical* space in a Woodbury hive is 1,892 inches, but if it were increased in depth by two inches, as suggested, its area would be increased to 2,312 inches, which would bring it more nearly to the standard measure of a bushel, so often strongly recommended as the best general size for stock hives for this country. We most cordially approve of this sized hive, but do not agree that it should necessarily be square. We have plainly shown that the principal loss of comb space in hives arises from the fact that the bees will not attach the ends of their combs either to the ends of the frames, or to the front and back of their hives, if there are no frames in them, except at their upper parts, and consequently in hives which contain the largest number of combs, this loss of space is the greatest.

We prefer a hive which has the same internal area as that suggested, *i.e.*, as nearly as possible that of a bushel, and where the frames are less in number, but of increased individual area.

This implies that the hive should be of oblong shape, with the combs running parallel with its longer sides, or in other words, that it should be longest from front to rear.

Of this kind of hive Langstroth says, "A hive long from front to rear, and moderately low and narrow, seems, on the whole, to unite the most advantages. Such a hive resembles a tall one laid upon its side, and while affording ample top-surface for surplus honey, it greatly facilitates the handling of the frames, besides diminishing their number and cost." He further adds in a foot note :—

"Mr. M. Quinby, of St. Johnsville, New York, in calling my attention to some stocks, which he had purchased in box hives of this shape, informed me that bees wintered in them about as well as in the tall hives, the bees drawing back among their stores in cold weather, just as in tall hives they draw up among them. My hive as at first constructed, was fourteen and one eighth inches from front to rear, eighteen and one eighth inches from side to side, and nine inches deep holding twelve frames. After Mr. Quinby called my attention to the wintering of bees in his long box hives, I constructed one that measured twenty four inches from front to rear, twelve inches from side to side, and ten inches deep, holding eight frames. I have since preferred to make my hives eighteen and one eighth inches from front to rear, fourteen and one eighth inches from side to side, and ten inches deep. Mr. Quinby prefers to make my moveable frames longer and deeper."

Here then we have the opinions of two of the most enlightened apiarians in America, both publishers of most valuable works on bee culture, perhaps not always agreeing on minute points, or in the results of their individual observation, but certainly most earnest in their endeavours to promote the advance of the science, affording each other mutual aid, and working hand in hand together, thus setting an example that might be worthily followed in this country.

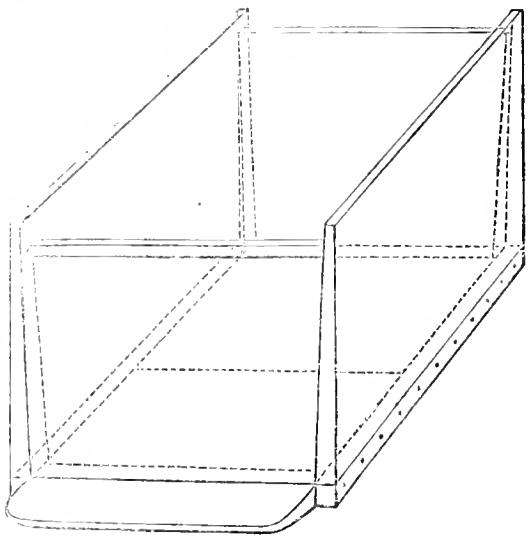
We propose that our hive shall be 17 inches long from front to rear, 11 inches deep, and that it shall contain eight frames. We must inform our readers that these are *not new dimensions with us*, we have had such hives in use for several years, and thoroughly believe in them; that they are not too large for the breeding capacity of their queens has been exemplified during the past season. We have had abundant evidence, for in hives containing twelve frames of the size here indicated, every one of them has been filled with brood and in honey seasons the results have been satisfactory. In large hives containing twelve or thirteen frames, the central portion has been reserved as the breeding space, the sides used as collaterals, the parts being separated by thin division boards, spaces being left for the passage of the bees both under and round them.

Our purpose, however, has not been to vaunt the merits of any particular hive, but to shew what we consider will lead to improvement in the construction of hives generally, having especial regard to the comfort of the bees, and the convenience of their owner when manipulating them. We originally proposed on page 83, to form our hive of material which would stand the vicissitudes of this climate with no outer protection except such as might be offered by an overhanging roof, or the shade of adjacent trees, but in deference to opinions kindly volunteered by our correspondents (and in the multitude of counsellors there *is* wisdom) and considering that with many it may be less inconvenient to provide temporary protection when necessary, that it would be to incur the cost of such permanent hives, we readily modify our views in that respect, believing with them that the description of a hive of lighter material, to which additional thickness may at any time be added, will be more acceptable.

The walls of the hive will be made of boards of half an inch in thickness at the top, and seven eighths of an inch at the bottom, and the floor board will be an inch thick, the crown or honey board, if any be used need not be more than a quarter of an inch in thickness, as its sole purpose will be the closing of the interspaces between the frame bars, which will be flush with the top of the walls, and having regard to the usefulness of "the quilt" at all times when supers are not on the hives, its necessity, unless in the form of a super bottom, is questionable. The sides will be exactly 18 inches long outside, and must be cut square at both ends; the back and front must be cut 13¾ inches long at the top, and 13 inches long at the bottom, diminishing regularly at both ends, the depth must however be reduced by half an inch, which should be taken off the top edge, so as to permit the frame bars to rest upon them, and remain even with the top of the sides of the hive. The outside of the top edges of the front and back should be planed away as indicated in engraving (see also page 115) so

as to present as narrow a surface as will be reasonably safe for the frames to rest upon, to prevent the crushing of bees during manipulation. The moveable side pieces will be seven eights of an inch in thickness at the top, and rather over half an inch at the bottom, they will be cut out of the same kind of board as the walls, but will be about half an inch less in width than the sides of the hive, to prevent the crushing of bees as they are being replaced in the hive, and to permit of their passing beneath them (see page 115.) The floor board will be made of two pieces of inch board, eleven inches wide and twelve and three quarter inches long, laid side by side, which will be held together by strips of wood nailed along their ends or grooved into them.

The floor board will, when thus completed, be fourteen and three quarter inches from side to side, and twenty two inches or thereabouts, from front to rear and will project (as an alighting board) about four inches in width along the front of the hive. This projection should be chamfered away equally on both sides of its front edge, until it is reduced to a thickness of a quarter of an inch, when both sides being alike, perfectly plain and smooth it will be (as all floor boards should be) reversible and easily cleaned. The entrance which should be about nine inches wide, and half-an-inch high, to give ample means of ingress and egress for a large army of workers, will be cut out of the bottom of the front of the hive, instead of being sunk in the floor board. This will give several advantages which are too often lost sight of, for instance, a temporary floor board can be at any time substituted, the floor of the hive will be flat all over, and may becleared of dead bees, and *debris* by means of a hook from the outside, and the entrance may be easily contracted by means of slides which will fit along the whole front of the hive, and which will not necessarily be displaced when the floor board is reversed or exchanged.



In the accompanying engraving we have endeavoured to shew the outlines of the body of the hive only. It may be put together by dovetailing, by wooden pins, driven diagonally diverse ways, or by simple nailing. We are not in favour of dovetailing alone, from the fact that one way the walls are not prevented from warping, and causing crevices in which the larvae of the wax moth find agreeable accommodation, but think that cross bradding, with iron angle plates at each corner, far preferable. For economy of material the moveable side pieces should not be more than fifteen and a half inches long at the top, diminishing evenly to fourteen and three quarter inches at the bottom, the clamps at either end being half-an-inch in thickness, will then make them of the correct length. (See page 115.)

They should be pressed into position until they hold the frame bars firmly in their places, as a whole, they should then be planed away until their top edges are level with the top of the back and front of the hive, when strips of the half inch board, screwed on to their top edges, will form their projecting ends and make them complete, and level with the frames and sides of the hive. An improved method of preventing longitudinal movement of the frame bars, will be found described in the letter of Mr. Adams, of Melksham. It is very simple, and easy of application, and being independent of the frames, and moveable is preferable to the means suggested by us on page 115.

WHAT TO DO, AND WHEN AND HOW TO DO IT.

—o—

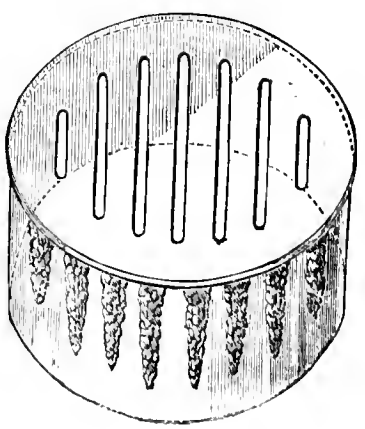
At this time of year, when bees do not generally fly abroad, the bee keeper should pay every possible attention to their wants, and the comfort of their home. Many writers urge that this being their season of rest, the policy of "letting them alone" is the best that can be adopted, and in this we perfectly agree when the bees are well housed, and in all respects "comfortable." It often happens that when bees are "let alone" for a lengthened period, their owner finds them at last dead and putrid, yet with plenty of honey and other provisions in the hive. This state of things is usually brought about through suffocation or dysentery, in either case it is manifestly through insufficient ventilation. Many bee keepers, to protect their bees from the cold, contract the entrances of their hives to such a degree, that only one bee can pass at a time, forgetting that occasionally bees die within the hive, and that their survivors cannot carry them out, unless the entrance be large enough to permit the passage of at least two bees at the same time. Bees of a strong stock sometimes die indoors at a season when the weather is too cold to permit of carrying the dead out of the hive, yet not cold enough to prevent operations within, in which case the dead bees are simply thrust outside the doorway, but it often happens that in endeavouring to force them through such small entrances, or from the accumulation of dead bees just outside them, the doorways become blocked, so that no bees can pass either way, and death by suffocation of all within the hive, as a matter of course, ensues.

On the other hand, through insufficient upward ventilation, and consequent dampness of the hive, bees in hives, the entrances of which have *not* been contracted, may become dysenteric, through extraordinary consumption by them of food for heat producing purposes, (consequent on the cold damp state of the hive), and their inability through stress of weather, to take the necessary airing flight. In such a case they die by hundreds, while clustered between the combs, and fall to the floor board in heaps, choking all the passages between and around them, or they remain on the outsides of the cluster up in the combs, forming a deadly wall of corruption which encloses the living bees, infects the whole hive, and induces the disease to assume a kind of typhoid character, which speedily destroys the whole of the colony. We have found stocks of bees, with their floor boards "paved" with dead to a depth of near three inches, yet with no outward sign of the mischief within, which had evidently been going on for some weeks.

We do not approve the "letting alone" of bees at this time of year, but prefer to visit them at even as often as convenient, when by the introduction of a wire hook, about eighteen inches long, with an inch bend at the end, we search for dead bees on the floor boards, always hoping not to find any. The presence of a few dead ones is not always a sign of actual disease, but their removal is always desirable as a preventive measure. In a healthy stock the bees will carry out their dead, but in one diseased they are unable to do so, and it is the accumulation of the dead which must be carefully watched for and guarded against.

We recommend the evening for examination unless during very mild weather, because less loss of living bees will be occasioned by their disturbance then, than if the floor boards were cleaned or exchanged in broad daylight.

The indiscriminate interchange of floor boards should be carefully avoided until they have been cleansed and boiled or baked for some minutes, to ensure the destruction of vermin, and the germs of all disease.



We have been endeavouring to procure a kind of super (of glass) which would permit of storifying if necessary, and have fortunately been introduced to an article which has hitherto been "a drug in the market." It is a cylinder of glass beautifully white and clear, hitherto of nominal value. Originally it formed part of a tall glass shade but which, happening to be too tall, required to be cut down, and hence a cylinder was formed to which we applied a perforated board, forming a set of bars, which may be covered with a close fitting crown board, or surmounted by other supers. The present cost of such waster cylinders averages about *fourpence*, but if required to be cut from shades, they may be obtained capable of holding forty pounds of honey, for about half-a-crown. They may be obtained at almost any glass warehouse; a fern shade costing 4s. 6d., will make three of them of useful size, leaving the dome for use as a glass bowl or for propagating purposes in the garden or greenhouse.

Correspondence.

THE QUEEN CAGE.

To the Editor of the BRITISH BEE JOURNAL

DEAR SIR,—I send you herewith a queen cage, which may serve as a pattern for "W. J.," who asks for information on the subject. I am not aware that any of our hive makers manufacture them, unless it be Mr. Pettitt, of Dover. No doubt any wire worker would furnish them at a cheap rate. Any hive maker would probably find it to his interest to keep the cages in stock.

GEORGE RAYNOR,

Hazeleigh Rectory.

THE STEWARTON HIVE.

SIR,—I had almost made up my mind to confine myself entirely to relating my experience in my own apiary, and not enter into any discussion whatever, but your closing remarks upon my crown board, (see page 114,) and Mr. Carr's remarks, (see page 120,) induce me to throw aside the resolution.

It is not many years since the very clever apiculturist, S. Bevan Fox remarked in the *Gardeners' Chronicle*, amongst other objections to the Stewarton hive, that notwithstanding the number that had been sent to England, he was not aware of a single super having been obtained, the cause of this arising no doubt from their owners not adhering to the instructions sent, choosing rather to be guided by those who were of the old school, thus getting disappointed and rendering the hive liable to much unfair criticism. And now we have Mr. Carr condemning the principle of these hives, and trying to palm off an inferior one, as possessing all the advantages of the famed Stewartons. As the properties and working of these hives have already been ably described by a "Renfrewshire Bee Keeper," who is still likely to defend their principles and confound the audacious attempt of Mr. Carr, I will confine myself almost wholly to the slides and crown board, but say emphatically that if Mr. Carr's article is correct, he knows little of the working of the Stewarton hive, and proves this in his paragraph on the two supers.

It matters not whether the system is the best or not, if any person or persons approve of it, and it is very aggravating after one has so kindly given detailed instructions at great length and pains, to see another come forward, condemning the construction and working of the hive, when he himself is ignorant of its proper management, and so rendering all our work futile; but Mr. Carr is not the only person. Another of the Manchester School, viz., Mr. Pettigrew, some time since, in the *Journal of Horticulture*, condemned these hives for utility, and denounced them as being small and shallow, and to crown all, he vented his spleen on their beautiful and unsurpassed supers, as being all sugar, but his evidence in this case was not worth much, because one of the supers so called sugar by him, was gathered by my own bees from the bloom of the bean, and although I have sent in my own share of supers to the market, I never in all my life tried to induce my bees to fill supers by feeding, in fact the construction of my hives will not permit of it. From what I knew personally of Mr. Pettigrew, I fain hoped that it was only his ignorance of the superiority of the Stewarton hive and its produce, over the old straw, but alas! from what has transpired lately, at the Manchester Show, I now form a very different opinion. Some people write solely for the purpose of diffusing knowledge, and some for ostentation. Mr. Pettigrew evidently belongs to this latter class, for in a recent number of the *Journal of Horticulture*, he introduced as new, a very clumsy method of supering, and in a more recent number, Mr. Breen attacked him for being a plagiarist, which was followed up by what Mr. Pettigrew thought a satisfactory apology.

But to return to the slides and crown of the Ste-

warton hive, Mr. Carr condemns the slides, first, because they require heating to unfasten them. I cannot see how there can be much objection to this, as one heated iron will loosen a dozen or more slides in a few seconds, I never break any, nor find any difficulty in withdrawing them. The next objection he makes to them is their thinness, but here he is wrong. He says they are three-eighths, whereas they are only a quarter of an inch thick. His experience here is quite at variance with mine, he advocates a thick, but I a thin crown, in fact the thinner the better, which is one of the best features in the Stewarton hive. The thinness permits an insensible escape of the steam generated by the bees, it also allows the heat to escape into a super, thereby insuring the purity of it. The same heat ascends as if a large hole were in the centre, but the vitiated air is not allowed to ascend and so discolour the combs.

To prove the foregoing, if we lay a piece of glass close upon the top of the hive, in a short time much wet is produced through the condensed steam, or if we lay the same thing or a slate on the top of the covering it soon becomes wet, and again even though we do not draw a single slide during winter, the extreme thinness of the slides allows the steam to evaporate, hence the reason we have never mouldy combs, such as are sure to be found in hives with thick crownboards. In this case the steam rising from the bees is absorbed, and retained in the thick crown board, until it becomes not a passing, but a fixed cloud with a continual shower falling back upon the bees, and so causes dysentery, and ultimately the loss of the hive. So effectually is ventilation carried on with thin crowns that in fact I am careless whether I withdraw them during winter or not. Although I advocate insensible crown ventilation, and may add that the first time I saw this recommended in print was a number of years since in the *Journal of Horticulture*, where a letter from Mr. Langstroth, recommending the carpet, and one from my own pen appeared at the same time recommending a similar plan. As my intention in writing is not to condemn other hives, nor try to alter Mr. Carr's opinions, (for like John Gilpin he rides his hobby, and is away with it) but simply to advise those who have gone in for the Stewarton hive, to stick to the instructions sent, and to those given in this Journal, I assure them that they will be rewarded, as many now in England have been, since they were privately told to pay no attention to quacks. I think we may infer that seeing Mr. Pettigrew's judgment cannot always be relied on, that people will pay no attention to his remarks on the Stewarton hive at the Manchester Show, but will endeavour to beat the original bee keepers of the west with supers finer than any produced on the Pettigrew system, and then they will have no reason to regret having taken the advice of

A LANARKSHIRE BEE KEEPER.

THE USE OF DRONES.

DEAR SIR,—In writing to you about drones, I am simply giving my own opinions, and hope that you and the readers of the Journal will bear with me as I endeavour to ventilate the subject. Of course there is nothing about drones to lead any one to suppose they gather honey, but I have seen them coming in all yellow with pollen at the season of their banishment by the bees. It could, however, have been of but little use to them, as they cannot take honey without the aid of the bees, consequently when neglected by them they must soon perish. The weight of ninety drones is one ounce, and it takes one hundred and ninety bees to make the same weight, therefore the ninety drones produce the same heat as the hundred and ninety bees, yet consume no more. The drones honey bag is very small, it is only about the size of a pins head, and I don't think it is capable of expansion. I have never been able to detect the slightest enlargement of it, although I have made it a subject of close observation, wishing to ascertain the truth of the assertion made, that drones are such monsters for honey. I shall be hard to convince that they are of no value as heat producers.

JOHN ARMSTRONG,

Stirlingshire.

THE STEWARTON HIVE AND SYSTEM.

In the opening numbers of this periodical the present writer contributed an article on the Stewarton hive, its origin and manipulation, and it is requisite the reader should be informed that this hive and mode of bee management, has been for many years very extensively employed in and around its natal place. The bee keepers in the district possessing such colonies, although generally well informed, and thoroughly enthusiastic in everthing appertaining to the bee, have their interests chiefly centred in so managing their colonies to the very best advantage, as to enable them to repay the outlay for hives and swarms together, leaving as much margin of profit as possible; consequently every conceivable plan is as carefully considered and weighed as the moves on a chess board are keenly discussed, and when thoroughly tested, is either adopted or discarded by the general body, as the case may be. Therefore there are points

so well understood and firmly established, that they have passed into axioms, consequently what I described was no hap-hazard crotchety speculation of mine, but a recapitulation of such of them as would be at once endorsed by the "Ayrshire Apiarian Society."

Yet notwithstanding, your correspondent, Mr. Wm. Carr, was rash enough to step forward and throw down the gauntlet, deny the origin, and "condemn" the manipulation, leaving me no alternative but to point out his error, and I concluded from his silence in the November number, that he had accepted the corrections in the same fraternal spirit as that in which they were tendered. In that month we had only your late valued correspondent, Major Munn, poking a little fun at the similarity of name of the Kerr and Carr Stewartons, and his putting right my slip of the pen, in substituting James II. for Charles II., which arose from my hurriedly copying while writing, from the title page of my copy of Rusden's work, where he describes himself as bee master to the King's most excellent Majesty, James II., (1687). How very saddening to think that ere what he had written, had met the eyes of your readers, the hand that guided that genial pen was mouldering into dust.

The December number appeared, and then

> "that unhallowed morn arose,
> When first the Scot and Car were foes."

and the whole force of your correspondent's philippic burst upon my unsuspecting head, I thought as I read, well, there is an old and trite idea, that there is an instinctive inclination to copy and reproduce the manners of those we mingle most with, bee masters with those of bees for instance. Supposing one of our little favourites gets out of his latitude, and crosses my paper while I write, lovingly I take up the little creature, and gently set it on the right road, but how am I requited for the kindness? does it not turn and attempt to sting? and if it fall to the lot of but a bee *keeper*, to take up and send away on a correct bee line, a bee master, how much more tenderly must he be handled? and does he but suppose his bristles are in the slightest degree displaced, he too seeks his revenge, in attempting to sting.

We smile as we note the rapidity with which he flits, from paragraph to paragraph, in quest of some little opening, into which he vainly tries to thrust his dart, but all proving futile and ineffectual, as a last resort, bee-like, he dashes full tilt on my bee veil, my unfortunate *nom de plume*, upon which he blindly expends the full fury of his wrath.

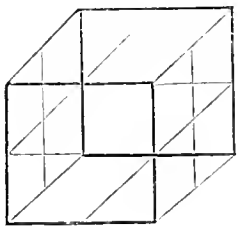
Before proceeding to such, I would seek to remove an impression from Mr. Carr's mind. I had not even the smallest intention of classifying him with that section of the "Manchester school" of straw hivists, of which Mr. Pettigrew is the acknowledged head.

As to slides, there is such a thing as a tight and bad fitting slide, as well as a bad fitting crown board. I have never yet employed heat for their extraction. For misfitting ones, a pair of pincers is generally sufficient, but I like a good one and three quarter inch projection to draw by, the sharp edges rounded off with a hand plane, it may be extra easy at first, but gives no trouble afterwards. Your correspondent's fault as to their thinness, is a manifest advantage, as through it Kerr was enabled to counter-sink his bars, thereby lessening the intervening space between the stock and supers, whatever glow of warmth passed into the latter, being an apparent help, along with the external woollen coverings, to raise the temperature, and speed on comb building. At the present season, the slides in my stocks are entirely withdrawn, and ventilation rendered perfect with Indian matting, cut into octagon, square, or round form, in keeping with the form of my several stocks, secured with minikin tacks, and bound round the edges to prevent rippling. That material, from long experience, I find gives off, and does not retain the damp vapours, as the blanket recommended by your correspondent must do, neither does the matting afford the same shelter and congenial rendezvous for moths, and their eggs, as damp woollens. In addition to the enumerated advantages of the bar and slides, alluded to by "A Lanarkshire Bee Keeper," I will meantime only add, that any particular bar or frame, as the case may be, can be raised without disturbing the rest of the stock.

Your correspondent jeers at giving two supers at a time, and asks "What bee master would ever do such a thing?" Should he ever have the good fortune to possess colonies as populous as I have frequently had, he may require not alone to give two, but as many as three and four, as I have before now had occasion to do, on some sudden burst of oppressively hot weather, finding it at all times more profitable, keeping my bees fully occupied in fabricating comb in prospective supers, to hanging in idle masses from the landing board, or going off in swarms. It is a sound axiom in bee keeping, too frequently overlooked, that the more we tempt bees to do, the more they will accomplish.

As to the origin of the Stewarton hive, Kerr invented it as truly as Watt did his engine, and it would be equally illogical to give credit to Newcomen, for the inventions of Watt, as to Geddie or Rusden, for those of Kerr, and pray what in strictness did either Geddie or Rusden invent? Only certain unmentioned improvements. What they did was to pirate the hive they saw in operation with Dr. Wilkins, the Bishop of Chester, this we have on the best of all authority, that of Rusden himself, as I have already pointed out. The Bishop was clearly the first possessor of both a storified colony, as well as an octagon hive, of which we have any record, but whether its inventor or not, must ever, I am afraid, remain an open question.

With the evident desire of elevating his former champion inventor, the apothecary, from the humble position in which I placed him, as the mere dispenser of Geddie's licences, your correspondent most unfairly says of Geddie's patent boxes, "But they had no frames inside for the bees to fasten their combs upon, but simply octagon boxes, but Rusden in his work published four years after, improved Geddie's hive, and put frames in for the bees to fasten their combs upon." But so far from this being the case, I find at the 89th page of Geddie's work, under the heading "A new discovery, &c." "Within each box there is a square frame," and that your readers may not be mystified into supposing "Is not this a description of the present Stewarton hive said to be invented by Kerr?"



I here subjoin a sketch of the aforesaid frame taken from Geddie's work, which, instead of being what is understood by a frame in the present day, rendering each comb moveable at pleasure was in other words but a series of "cross sticks," to aid in supporting the combs, and by which the central square portion might be more readily torn out at the demolition of the contents of the box. In my first hives of both wood and straw, before I had as much as heard the name of either Geddie or Rusden, I secured such "cross sticks" or bars, separately, with screws from the outside, and on the breaking up of my waxen citadels, unscrewed and secured at once, not the central square merely, but almost the entire contents, and it certainly did not occur to me to dignify my inventive advance on my cottager neighbour's willow wands, by styling them either bar or frame hives.

I have already endeavoured to show that the earliest record we have of both the non-swarming or storifying system of bee keeping, as well as the octagon hive, was that in the possession of Dr. Wilkins, mentioned above. Your correspondent, in his endeavours to ante-date that period, has ransacked the works of Butler and Purchas, a road I have travelled on a similar errand long ago without result. He alighted on a passage to the effect that after mid-summer, when swarming might be considered as over for the season, a usual practice with cottagers, even in our time, is to insert an eke below their straw skeps. Well, it would appear it occurred to Butler, that instead of introducing such an eke, he would invert the hive, and place an empty one over it, in the hope that the bees would ascend and fill it too, permitting the original hive to be appropriated. It was so unlikely and absurd a proposition, that Purchas but referred to it to condemn it *in toto*, and indeed it would appear all notice of it has been expunged from my later edition of Butler's work, and yet your correspondent, in his anxiety to supplant the Bishop, would magnify on no better data Butler's bungling manipulation into "I think, (therefrom) he was the inventor of the storifying system, as he was of many other things." When I want a hearty laugh, I usually take down one of the apiarian fathers, they are positively much more amusing than even the Rev. W. C. Cotton's recent translation of the grotesque "Buzz-a-Buzz," from the German. What would you readers think of Butler's recommendation of coating hives liberally with "cow dung," and his purifying ideas for a used hive, are equally good, the recipe is as follows:—Put two or three handfuls of malt or peas into the hive, set it before a hog, and it being supposable the grunting mouth would water profusely over the guzzle, and the saliva, or "froth," as he styled it, would flow in abundance, it was to be well wiped round with a cloth, when it was to prove as irresistible to the bees, as, shall we say, your correspondent's "old soap box."

Mr. Carr mentions that such a receptacle (old soap box) has been known to yield as splendid honey, as was ever taken from a Stewarton Hive! Such an expression would lead one to suppose a well finished Stewarton super is a thing he has got to see.

It is not the hive certainly that makes the honey, no more is it the implement the farmer employs that makes his harvest, but in both cases there is a harvest to reap, and the farmer who can put most hands on the harvest field, and employs the latest and best machinery, produces a better sample and greater profit than he who sticks to the old hook, and smaller force of workers. We too have our harvest to reap, the crop is usually abundant, going to waste, and to be had for the gathering, our harvest hands are all alike willing, and he that combines his force, and employs such a reaper as the Stewarton, produces the largest yield, and the finest sample put upon the market, while he that sub-divides his workers into odd corners of the same field, with the old skep, hook fashion, is left far behind, both as to quantity and quality. Surely we have not adopted a hobby so utterly antiquated and effete, that it is beyond the pale of any improvement or advance. Is not this very periodical supplying a felt want, to chronicle the steps of our onward march?

Was it not the same fluid water converted into steam, which raised the lid of the tea kettle, the piston of the engine of Newcomen as well as that of Watt, with what immense difference as to results. So was it not the same honey which was carried into the manure plastered wicker hive of Butler, the octagon of Geddie, the modern Pettigrew big straw skep, as well as the Stewarton hive, but with what difference of results as regards the latter? In the hives of Butler, Geddie, and Pettigrew, we have one common result. Overlooking the honey yielded by the spring flowers, the gooseberry, the plane and fruit tree, we have in quantity the pure limpid secretion of the white clover, the greenish lime tree, the inky exudation of the honey dew leaf, and the reddish coloured gleanings of the purple heath, together with the many hued varieties of pollen, dark used envelopes, eggs, larvae, grubs, and young bees in all stages of progress, in one conglomerated mass of inextricable confusion, in all these hives alike, but what of the Stewarton? a hive where our industrious little favourites have a fair opportunity of carrying out the beautiful systematic instincts of their nature, bringing order out of chaos. Here we have an ample force by combined swarms, then, as I have already styled it the separate "honey condenser" and the shallow super compartments, where the pure virgin honey is stored in massive combs, as distinctly and separately as possible, each freely communicating by means of the ingenious slide, and totally distinct from all such extraneous impurities as mentioned above. And not alone does it offer those facilities for having their treasures duly classified, but the workers too. By the same contrivance, the honey gatherers are allowed to stream up with their loads to the supers, by the end openings free from all obstructions, and distinct from the province of the queen nurses and pollen collectors of the central department. Was it not too, the same with the juice of the sugar cane, which was set on the breakfast table of our forefathers, in moist, dark, repulsive form, sparkling with the black diamond refuse, and chips of the coal hogsheads, sent out to fetch it home, freely

interspersed with the crawling sugar acaria, damped with the sweat, if not the blood of the slave? Fit accompaniment was the honey stored in the blackened brood combs of the common straw skep, but thanks to the inventive genius of two Strath-Clyde men, a Watt and a Kerr, we have in one day the same juice of the cane, and nectar of the flower, in what a different form, the sparkling crystals of the "Greenock Crush," free from even a spec of impurity, side by side with the luscious clover combs from the Stewarton super, vying with each other in their glittering purity, both sweet illustrations of the strides of progress, in their respective departments.

In conclusion, I have only to add that long may the *British Bee Journal* prove a medium for the interchange of ideas on our common hobby. We have all something to communicate, and something too to learn, and in the discussion of all debated points, I trust that our "chairman" will see to it that the language employed is at all times strictly parliamentary.

Correspondents who may choose to enter the lists, and throw down the glove, to do battle for any particular position, must avoid indulging in such vulgarisms as "Giving the lie to," and employing such clenching arguments as "It is all nonsense," or they will be looked upon as foemen, unworthy of the steel of

A RENFREWSHIRE BEE KEEPER.

THE USE OF DRONES.

DEAR SIR,—I observed in the issue of your last excellent Journal a letter signed J. Armstrong, Stirlingshire, respecting the use of drones in the bee hive. He said although they did not go abroad and gather honey, they were very useful for producing heat for the young, and only came out to get their mid-day airing flight, but I beg to differ from his opinion on that subject, for I am convinced that their principal use is only for the purpose of upholding the regality of the stock, and I don't believe that a large number of them is any profit whatever, because every intelligent bee keeper is aware that the stock of bees is much reduced in the spring, after standing the perils of the winter weather, and are comparatively few in number, but nevertheless they are quite able to keep up the temperature without the assistance of drones during the hatching season. Even at that cold time of the year they are able to go abroad and gather honey when weather permits, and produce a large stock of young bees also, and the population of their kingdom increases so rapidly, that they are compelled to emigrate to a new colony, and establish an independent empire of their own, and it is but a very small portion of the drones which accompany the swarm in their flight to their new home. Three or four weeks must therefore elapse before it is possible for them to produce young drones of their own to be of any service to them whatever, although they be favoured with the very best of weather, and if the parent hive be then examined, in all likelihood it will be crammed with these helpless princes that can neither work nor want to do so, and they are the primary cause of keeping the revenue of their little kingdom at such a low ebb. All the season through, it is the heavily laid taxes that prevents the mother hive attaining to as great a weight in general as top swarms do, especially those that do not swarm a second time. Surely that is sufficient proof to shew that drones can be dispensed with in the nursing season, so far as heat producing is concerned, and as for their mid-day airing flight, it reminds me very much of Mr. Idleness and Mrs. Nothing, taking a pleasure drive in their carriage when the weather is good, enjoying themselves with their family, but leaving the care and all the heavy duties of nursing for others to do at home.

W. M. STIRLINGSHIRE.

Bannockburn.

EXPERIENCE OF A NOVICE.

MR. EDITOR,—May our *British Bee Journal* thrive like bees in a hive. Great as are the discussions and instructions on bees and their management, perhaps a little experience from a novice may not be out of place, for there are always some beginners in the pursuit, to whom such may be words of encouragement or warning. I first became a bee keeper through a friend, who gave me his best stock in September, 1867. It was in a straw skep, and weighed thirty five pounds; I treated them as most cottagers do, and in the following May they sent out a swarm which went clean away, and I never heard anything more about them. In due time they sent out two other swarms, which both settled in a tall fir tree, and were safely housed, but with great difficulty, and all went well. In August I was told it was time to put them down, so the old hive and one of the virgin swarms were doomed to the sulphur pit. Three sides of my garden are shaded with tall firs, which in my opinion induces the swarms to take an upward flight, as notwithstanding all my care and watchfulness, I have usually lost my swarms. On one occasion I followed one for more than a mile, but they were too fast for me. In 1871 I left two stocks for winter, I was told they would require feeding, so I bought two feeding pans of an ingenious neighbour, who gave me some information on the subject, which led me to study these industrious little insects. I at once began to feed, and continued to do so all

through the winter and up to April. In February I made them a comfortable bee shed, and wrapped the hives in haybands, as recommended in *Bee Keeping for the Many*, thinking I should get swarms earlier than my neighbours. In this, however, I was greatly mistaken, for they had swarms before I did, as I now suppose, through my having overfed my bees, as I should think the queen could not find enough empty cells to deposit her eggs in. Long looked for came at last, for I got a swarm from each, one of which I placed in a wooden box, with windows at back and front, with wooden shutters having leather hinges. I was now able to see some of their antics, and watched their proceedings with great interest, and being desirous of some super honey, I applied a twenty pound bell glass, fourteen days after swarming, which they took to readily. I also placed similar glasses on the old stocks. Thinking to prevent casts issuing, I fixed a guide comb from the top of the glasses in the latter, right down to the adapting board, but to no purpose, cast they would and did, while the lazy drones took possession of the glasses and packed themselves in them as thick as thieves. In July I had seven stocks, I should have had eight, but joined the two last casts, together, and got from them twenty pounds of pure honey. My glass supers I was able to take by the aid of Aston's bee traps, having seen their effect when applied to a sixty pound super removed from a German hive. At my first trial I placed the super on the board attached to the trap at 6 a.m., and at 7 p.m. on returning home, I found it deserted by all the bees but three. My success on the depriving system determined me to abandon the use of the sulphur pit, and from what I had seen of the German hives of my friend who gave me my first stock, I determined to use no more straw skeps, but to go in for the bar frame hives. My friend got his joiner to make the hives, but I made the frames, although I found it rather a troublesome job. My next move was to get the hive stocked, which I did by driving and transferring. The driving was performed in a similar way to that recommended in the Bee Journal, but the hive was cleared by the aid of the bee trap before mentioned, upon which it was allowed to remain for about six hours, when only about twelve bees remained in it.

I then cut out all the combs, and fixed all the available parts in the frames, and placed them in the hive ready for the morning, when I returned the driven bees to their combs. Into this hive I placed three other stocks, proceeding as before. I fastened some of the combs in with string, and some with lath, but the former I found out the bees did not like at all.

In endeavouring to remove a stock from its floor board, the bees were so much irritated, that I was forced to desist, but the next day I lifted the floor board with them, and carried them away to be driven, setting them upside down on a large flower pot. Wrenching the floor board from the hive caused the bees to fly at me like a cloud, but being determined, I set the empty hive on the top, and placed the towel round, but found it was too short. In our hurry, for the bees and I were very lively, we broke the flower pot, and both hives tumbled over to the ground, so putting hive and floor board together, I placed them on their stand, and placed myself as far as I could get into a tub of cold water.

Moral! "Don't start before you are ready!"

It was three days before I attacked them again, when to prevent a recurrence of the evils enumerated, I fumigated them, and shaking them on to a cloth, picked out their queen, which I kept in an ale glass till I was ready for her. In the meantime I fixed the combs as before, and in the morning shook the bees from their combless skep on to the front of the hive, containing their combs, but instead of entering as others had done, they went in a body to the next hive, which caused quite a commotion.

As the queen was in the hive, I thought they would be sure to find her and return to her, and as my time was up, I was obliged to attend to more important duties, so I left them. I returned at the middle of the day, but found that either my own or other bees had fetched every drop of the honey out of the hive, and had torn the comb all to pieces, so that it was afterwards quite useless to me. The next hives I transferred, I put the bees into their new home at the top, and closed the entrance, so that only one bee could pass through it at a time, and all went well.

In the spring of 1873 I obtained some sheets of fluted glass, which I placed round my hives for protection and warmth, and found them excellent substitutes for haybands, they have a very neat appearance, and I was very much pleased with the result.

My next move was to purchase a swarm of Ligurians, which I received on the 28th of June and beautiful bees they are, and I hoped to be able to Ligurianise my whole stock before winter. I bought also a black stock, or rather a skep, for the man of whom I had them would not sell the bees, but only the hive; he was a bee keeper of thirty years stand-

ing, and had some queer notions about them. The floor board of that hive was a specimen of filthiness, worthy a place in a museum. My attempts at Ligurianising must be left for another letter.

J. B. WOODCOTE.

Newport, Salop.

NOTES.

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"Every one after their fancy," as the old lady said when she kissed her cow, and so I think it should and will be with every bee keeper. Now, Mr. Editor, it is not my intention to describe the old lady or her cow, nor yet the process of kissing, nor will I allude to the natural history of either, nay not even to that of the bee keeper, and only slightly to that of his bees, but my starting point is from the word fancy, and that in relation to bee keepers hives.

The above old saying has been called to mind on reading the various able descriptions of hives from contributors to the *British Bee Journal*, many advocating this size, and that material as the best. but would it not be a pity if all were to follow one idea, and that perhaps not a good one, nay far better follow the old lady's advice as good, for in so doing each will gratify his pleasure, and failure will not be felt so keenly, and mostly the thought to try again will suggest itself, though not generally without a little consideration as to the cause of the last failure, and a search for its remedy.

Now we must look on the *British Bee Journal* as a medium by means of which all subscribers are desirous of adding to their knowledge of Apiculture, by reading descriptions of the experience, success and failures of others, and as it may not be without interest to some of your contributors to read a little concerning the bee hives used in Denmark. I will by your kind permission in a few articles entitled "Notes," endeavour to shew in a simple manner how fancy in the construction of hives differs in countries, as in individuals, therefore I will commence by noting a few of the requirements to be taken into consideration in the construction of bee hives in general.

As an introduction, I am pleased to see your remark in the last number, relative to the size of hive being optional. This is an opinion in time, and a valuable one, as on it, success at the commencement of bee keeping in a great measure depends.

Which is the best size of hive?

The question may be decided by each stating the size he has adopted, but as a general answer it may be said that which suits the district and climate best, and these two conditions vary greatly, therefore experience is the only true guide, and no one should commence bee keeping on a large scale before satisfying himself as to what really can be profitable under the above conditions. As an example of district influence, on speaking with a bee keeper a few days since, he told me that some years since he kept from twenty to thirty hives, whereas now, with as much care, he found nine or ten sufficient. He attributed the falling off to the higher cultivation and increased production of corn crops over the whole of his district.

Which is the best material for a hive? This question is one of much wider scope than the previous, and like it cannot be answered definitely. Wood, straw, cardboard, peat, or clay, or a combination of any two or more of these materials have all been used and have given satisfaction to those whose fancy suggested such, and in this, as in the former question, the effect of climate should be taken into consideration, as also portability, weight, and maintenance, when profit is the object in view.

Which is the best construction for a hive?

This question can only be answered by suggestions under three points for consideration, viz., outside, inside, and profit, with instruction and pleasure.

The outside construction of hives is very variable, being either round, square, oblong, or polygonal, in plan, and high, low or circular in elevation, and we find that each of these forms has its admirers, and all prove satisfactory under their management. The conditions worthy of notice in their outside construction are that they be of such material and strength as to enable them to stand exposure to the weather at all times without the protection of a bee house or other loose covering, and to gain this point wood or wood and straw are the preferable materials. If of wood they should be well painted of a light ochre colour, and varnished. A suitable varnish for this purpose is a mixture of resin, petroleum, and turpentine. If the hive be of wood and straw, care should be taken that the lists, if any, that hold the straw, are so arranged that there shall not be always a lodgment of water or moisture after or during rainy weather, but should be so placed that the rain can run down off the straw to the ground as uninterruptedly as possible. All hives should be of such a weight with their contents as to be incapable of rocking to and fro where they are exposed to heavy winds, otherwise they should be fastened down to prevent the fatal consequences of bees being dislodged, and falling on the floor board during their natural period of rest. It is a matter of internal convenience whether a hive shall open at the top, sides, or back, but the entrance should be as wide as possible, and not higher than three-eighths of an inch, and a contrivance arranged for diminishing from say nine inches to three-eighths. An entrance of higher than three-eighths of an inch allows the entrance of vermin as also in the autumn occupies the bees unnecessarily in building a protection wall of propolis inside it.

The inside construction has been the subject of much consideration and display of ingenuity, on which much may be said suggestively, in order that a hive may be made to suit the inhabitants, and be easy of manipulation by their master.

A hive may be of such a size as to be suitable for one family only, as it can be enlarged to suit twelve families. Undoubtedly there are advantages in a hive containing two or more families, for example, economy of labour and material in their construction, and an increase of temperature in the hives, also saving of space necessary in the garden, but these again are overweighed by more serious disadvantages, for example, disease is easier communicated from one family to another, robbery is to a certain extent encouraged, the odour, which is such a distinctive fea-

ture of a family, and almost the best security against robbery, becomes so alike that it leads to familiarity amongst the families, which ends in the bees going from their own department to that of others, and meeting with little or no resistance, the independent characteristic of single hives is in a great measure lost, therefore should it not be preferred by all bee keepers that a hive constructed for one family is the best? If this be granted as a desirability, the internal construction of such a hive may be based on principles to admit of the following advantages being gained.

Being constructed so as to divide into two compartments in the proportion of say two to one, and so that the compartments can be used independently or combined, the smaller one for the purpose of securing pure honey, either in the comb or in glass supers, and where feeding by means of a bottle or other contrivance can be carried on in autumn and spring, without attracting strange bees, and last, though not least, for the formation of artificial swarms. These larger compartments are of course intended to contain the brood and store combs. These compartments may be kept separate by either a thick partition or a very thin one and in depth either in one piece or several, but should be made to slide, so that a communication of the full length, and not more than three sixteenths in width, can be obtained between the brood and honey compartments, or the opening can be increased when it is desired to form an artificial swarm by allowing the queen to pass through to deposit her eggs, and then closed entirely, or according to the results desired.

Provision should be made for ventilation, but in such a manner as to avoid draught, and for this purpose I have used pieces of Drugget carpet single, over my partitions, and for covering the internal doors of glass, which has proved very satisfactory.

The hive should be closed by internal doors or partitions, preferably with glass inserted, and each compartment should have its own, so that the space for brood or honey may be diminished according to the number of frames to suit the stock's requirements.

Hives should be fitted with loose frames, and so arranged that they may be easily extracted, the size to be of such a size and form as not to give a larger area of unsupported comb than will be safe from risk of breaking during the operation of extracting the honey, or in taking them out and putting them back in the hive. All frames should correspond in size with reference to both compartments respectively. The frame bearings should be so constructed as to hold the frames in a steady, rigid position at the proper distances from each other, or what is preferable the frames should be so constructed as to maintain their own respective distances independent of the bearings, and on no account should metal surfaces be used in the interior of hives if avoidable.

Guard against small crevices or vacancies into which the bees cannot enter, as also useless spaces, the first particularly as a security against the moth and waste of labour in propolising, the second to prevent the bees building comb which cannot be utilised. All hives, until built full of comb should stand perpendicular in the longitudinal direction of the combs, otherwise the weight of the bees, while building, will cause the comb to be built unsatisfactory whether in the frames or not.

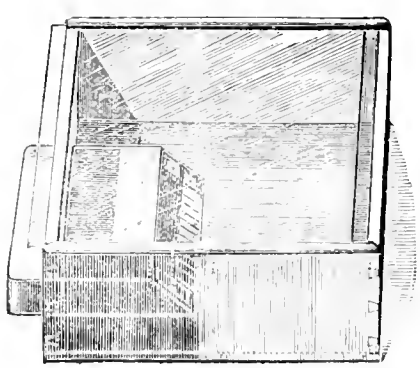
J. S. WOOD,

Denmark.

These observations have reference to the Danish hive, in which, (as in the Italian hive exhibited by M. Sartori at the International Exhibition at Kensington, 1873, and for which a medal was awarded) the frames hang parallel with the front, and the openings are at the back of the hive. The "internal doors" are more in the character of close fitting "dummy frames," glazed on the inside, and are used to contract both the breeding and honey compartments respectively. Perhaps Mr, Wood will oblige us with drawings, so that we may illustrate the Danish hive?—ED.

MR. RICHARDS' DRONE TRAP.

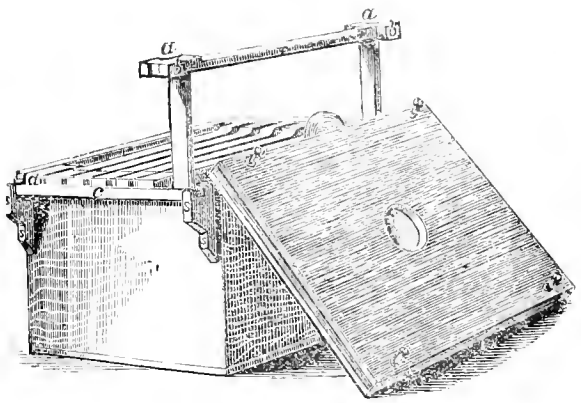
Herewith is an engraving of the drone trap, described in the November number of the Journal, page 108, one of which Mr. Richards, of Par Station, Cornwall, has kindly forwarded to our office. From the account he gives of its wonderful performance during the past season, it must be a valuable acquisition, a drone trap being a necessary adjunct to every apiary.



HIVES.

—o—

Dear Sir,—According to promise I now send you a description of my bar frame hive, which I think an improvement upon the Woodbury. The enclosed photograph will I believe, make my description plainer to your readers if you can find space in your valuable journal to insert it. I found in practice that the notches in the front and back of the hives were a great drawback to the successful working of the Woodbury hive, as the bees were liable to fasten the frame bars so firmly into them that upon attempting to move them it was impossible to avoid jarring and shaking the bees, and of course whenever I tried to examine them, I had them buzzing about my ears. After being shaken up, is not the most pleasant time to study their habits, and then when all is finished, in replacing the bars there are always a number killed by being crushed in the notches, so that I find examining bees with such a hive anything but an agreeable occupations. You will see in the photograph that I do away entirely with the notches, and brad on pieces of wood, *b. b.*, one inch long, to one side of each top bar of frame *a.a.*, which I call space bits, the top bars then rest on back and front of hive, quite flat. In taking them out or putting them in I find it a great advantage to be able to slide the bars along without any lifting, especinlly if the combs should not be quite straight, you will see they are kept in their proper places in the hive by the small bar of wood *c.*, which is moveable,and when all are in, they are kept tight by the wedges *d.*



The photograph shows the hive standing in its proper position, one bar being raised to shew the manner they fit in, there are seven frames in the hive. I have found the above the most simple, as well as useful plan I have met with. I have nine stocks in the same kind of hives at present. Will give you full particulars how my bees get on in April next. I am sorry I cannot give you a very flourishing account of our bee club. I have not been able to get any new members, the bee keepers here seem more fond of brimstone than anything else.

A. ADAMS.

Melksham.

MAJOR MUNN'S HIVE.

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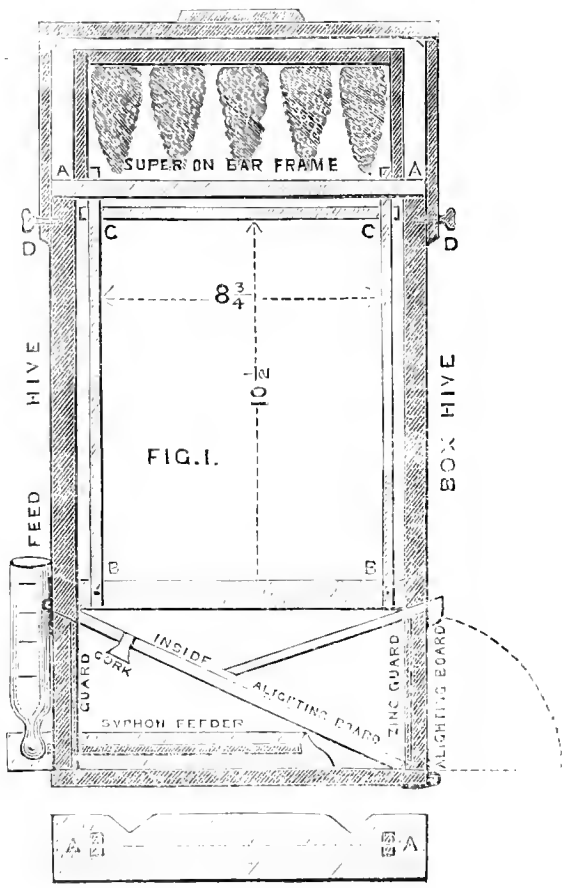
We here present our readers with an engraving of the hive which the late Major Munn considered the nearest to perfection. It is from a drawing of his own, which in fact was the last work he was spared to perform. It almost explains itself, and coming from his masterly hand, is worthy a place in the history of bee culture. Personally we are greatly indebted to our late valued friend and correspondent and hope ever to cherish his memory.

May he rest in Peace.



Queries and Replies.

NOTICE.—*When queries on any subject are nearly synonymous, we only publish that which has required the fullest reply.*

QUERY No. 73.—Would you kindly advise me what to do in the following case :—I had a wooden box, 14 inches square, given me with bees in it this spring. The comb appeared very black and old, so that I was advised to cut away some of the lower part. This would have been best attempted after the bees had swarmed and cast, but I was not in the way at that time, so in the autumn I took two cottagers swarms, and stupefying my own, added the bees, after cutting away the lower portion of the black comb. I fed moderately, but the bees made no more comb, and there is now at least four or five inches of open space between the bottom of the comb and the floor board, the bees clustering thickly on the comb, and rather busy about the entrance during these sunny days. I am afraid that if they have no more comb they will not keep themselves warm through the winter, although they are in a wooden closed shed. Should I change the board, and fix some clean comb on a new board, and place that to fill up the vacuum now existing for cold air below the clustered bees, or will it be better to leave the box as it is I am not feeding, as that excites too much, and seems to disturb the hive. If you could answer me shortly, I might be able to try something before the frost sets in.

S. A. H. S.

Horsham.

REPLY TO No. 73.—Pruning brood combs is generally quite unnecessary, in fact is more often injurious than otherwise. If they ever require excision, it can only be when they are so overcharged with pollen as to render breeding impossible, in which case the operation should be performed in the spring. Pruning them after the bees have swarmed and cast, is very unwise for several reasons. First there is a possibility that during a glut of honey, the bees would build an excess of drone comb, or supposing their queen to be lost, that they would build drone comb exclusively, if any. Secondly that having to replace the excised comb, they would be less likely to yield a surplus in their super, and thirdly there is the undoubted fact that bees winter much better in old combs than in new ones, because being coated with so much silky fibre, they are the warmer of the two, and again there is the chance that in an unfavourable season they may be unable to build any comb at all. The empty space beneath the combs is of little consequence to the existing bees, provided they have sufficient comb to cluster in, but the absence of the breeding cells will tell most seriously against the prosperity of the colony in the spring, as until (probably) the middle of April, the bees will be unable to build new comb, and perhaps then may be too weak to do so. Instead of attempting to fix combs to a new floor board, and placing them in a disconnected condition below those now in the hive, would it not be better to fix new combs safely and correctly in a super and place it above them? By doing this, which will be much easier than the measure you propose, the bees will be rendered more snug and comfortable, and will have ample accommodation for early breeding, which should be promoted by continuous gentle stimulative feeding.—ED.

QUERY No. 74.—Is it of any consequence in what position frames are placed in a hive? I mean does it matter whether they are from front to back, or from side to side, according to where the bees have access? For instance, I propose to put frames into a side box of a collateral hive. Of course they have access at the side from the stock box. Does it matter which way the frames are set. Also, is not barley sugar as good as anything for feeding bees? The expense is greater, but it is much the simplest way.

R. D. T.

REPLY TO No. 74.—It is not of the least consequence which way the bars or frames run in a collateral box. Many, however, prefer the shortest as the most likely line on which the bees will lay their foundations. A swarm will not always build its combs parallel to each other, nor in any particular direction, hence the advocates of the cross sticks in straw hives always use guide combs to induce the bees to build at right angles to them (the sticks). Barley sugar is undoubtedly very excellent food for bees, and at this season is better than anything else. In spring and summer, however, the bees cannot take it fast enough, hence it is better in the form of syrup.—ED.

QUERY No. 75.—I would feel obliged if you could tell me whether I can make use of black comb; also if you would inform me of the best and simplest method of turning comb into wax; and how far apart the slits should be in the crown board for a 10-framed Woodbury Hive, and do you approve of them?

W.N.G.

Rock House, Alphington, Exeter.

REPLY TO No. 75.—Black comb, unless it be very old and choked with pollen and filth, is as useful for breeding purposes as any other. For guide combs it is better than any other, as it is tough and will not break away from its fastenings as new comb will. Care should be taken, notwithstanding, to discard all comb from which the bees of former seasons have not hatched out. Sometimes in old combs some cells may be observed from which the sealing has not been removed, some such cells may have small perforations in them, their crowns being sunken, and their contents dried up; others may still retain the remains of dead brood, but wherever these are seen the comb should be consigned to the melting-pot, for there is danger that the combs are infected with foul brood. To obtain the wax from old comb, see page 95. The slits in a Woodbury honey board are usually two in number; they are each about 10 inches long, three-sixteenths of an inch wide, and 10 inches apart. They are not necessary in properly constructed hives. We never use them.—ED.

QUERY No. 76.—My straw hives have boards on top with 3-inch holes. These holes are now stopped, the hives are bound around with hay rope, they have empty hives on the top which are stuffed with hay. Will any ventilation be necessary? I have purchased two old common straw hives saturated with wet, and have had them for a week in a room with a fire at night, the general atmosphere of which is 57. The hives being now extremely dry, can I venture to winter them thus, or had I better remove them at once to their stands where some 20 others are, upon benches three feet from the ground, protected for 18 inches deep in front from snow or driving rain, and good roofs 3ft. 6in. above the floor, of zinc and painted timber? I have also three of Symington's recommended bee hives with 15 to 20lbs. of honey. Would you advise the side that has four to six bars unused outside dividing board to be stuffed with hay, and more put under top cover.

H.B.

Ballinlough, Delvin.

REPLY TO No. 76.—There is little doubt but that the hives would be better ventilated if the holes in their crowns were unstopped, so that the vapours of the hive could escape insensibly into the hay-stuffed hive above. You did quite right in drying the newly-purchased hives, and will be wise if you keep them from further exposure to rain, but bees will not bear confinement for any lengthened period, except during severe frost, therefore it would be better to place them on one of the benches you mention, which are evidently weather proof, and if not too close together

will do very well. The outer compartments of the bar frame hives do not require stuffing with hay; the open spaces allow the vapour of the hive to escape from the combs into them, whence they find their way to the outer atmosphere through the crown board.—Ed.

Query No. 77.—I have a straw skep with wooden top, in which my bees were hived 18 months ago. They threw off a strong swarm last May, and I placed a super over them, containing a large and tempting piece of guide-comb, in which they made not a drop of honey. I took away the super early in September, and since then my bees have been killing each other, hundreds lying dead under the hive, and I see them fight on the alighting board. The murdered bees are all small compared with the generality of bees in my hive, but certainly belong to it. These massacres take place at an interval of a week or ten days, and especially on Sundays. Can I prevent this? I also wish to know whether it is injurious to bees to unstick their hive from the floor board, to which they glue it so strongly? May I use the smoke produced by smouldering brown paper to calm my bees when driving them?

Dr. Watts.

Reply to No. 77.—We have had a precisely similar case in our own apiary during the past season. The bees destroyed, were bred in the hive, but when a few days old were mercilessly massacred. The queen was a pure bred Ligurian, raised in May last, but from the backwardness of the season and the combined coldness of the weather we judged she had been imperfectly fertilized. Almost all her progeny were very small, had usually only one broad golden band across the back of the abdomen, next the thorax, the remainder being jet black. They were pretty little bees with sharp pointed tails, quite differently shaped to the ordinary bees, and were evidently considered useless in hive. Having determined that the fault was with the queen we dethroned her, and gave the stock a fertile imported one, and since then all has been well. Whether the original queen (by stress of weather) became too old ere fertilization took place, or whether she met an imperfect drone, perhaps one of the progeny of a fertile worker which are said to be imperfectly developed we cannot say, but judging from our own case we think it probable your bees will perish during the ensuing winter months unless you remove their present queen, and give them one whose progeny will be perfectly normal. The removal of a hive from its floor board can do no possible harm at this time of year, in fact, the doing so that the floor board itself may be cleaned and the bottom edges of the hive freed from vermin and impurity, is highly essential. A little smoke, either of rags, paper, or tobacco, will drive the bees up among the combs, and enable you to do all that is necessary with impunity. It is nevertheless advisable in all cases for an amateur to protect himself with veil and gloves to prevent as far as possible the risk of accident. Smoke does not calm or soothe bees, but frightens them, and under such influence they rush at once to the open honey cells and fill themselves with honey, in which state they never volunteer an attack.—Ed.

Query No. 74.—Will you kindly give me your opinon of a Woodbury bar hive with glass sides and ends and wooden shutters? Will the bees live in it through the winter in a bee-house, as I should like to have some made after that pattern if you think they will answer? What space should there be between the bars, and should it be gradually increased towards the centre? Is it of consequence in a very large hive if the crown board rests on the bars?

H.B.M.

Spalding, Lincolnshire.

Reply to No. 78.—Hives with glass sides, &c., are non-absorbent, consequently, if well protected (by shutters or otherwise) their conductivity will not be materially increased by any condensation of moisture upon them within. We have wintered bees successfully in glass hives (Woodbury's), but the glass has always been double with dead air space between, and great attention was paid to ventilation. The Carr hive has triple glass with double air spaces at back. Glass well protected, either by dead air or by wool, cotton waste, paper, sawdust, or any other non-conductor, ought never to get below the inside temperature of the hive, and so protected is as good as any other material. Whether your bees will live depends on their number, age, and the condition of their stores, as so often repeated in the Journal. We have many times stated that space between the bars is of no moment, the bars should be one and nine-twentieths inches from centre to centre of each other. There is no necessity for increased space anywhere, but if any be given it should be between the frames and the sides of the hive, the above is the distance necessary between the centres of worker brood combs. In our opinion it is a great advantage to have the crown board resting on the tops of the frames for reasons which have been given, although if it were in strips we should prefer it.—Ed.

NOTICES TO CORRESPONDENTS AND ENQUIRERS.

W.J.—The pipe cover queen cage forwarded by the Reverend George Rayner may be had on application.

Hives.—A "Hivite," "J.B.," "Ligurian," and "F.C."—Your opinions and suggestions are well worthy of consideration, and shall have our best attention. The bees will be quite unable to propolize the shoulders of our "projected" frame bars, simply because they will be unable to get at them; the only part which will present itself within the hive which they will be at all likely to notice will be the points of junction of the bars, and those parts of them which rest on the front and back of the hive, but as there will be no crevices, but only closely fitting joints, the bees can do little harm. It would be absurd to say that no propolis will be used, as sometimes the bees will varnish the plain walls of a hive with it.

Foul Brood.—The infected comb has been at the photographer's for several weeks, but owing to the unfavourable condition of the atmosphere he has been unable to obtain a good picture of it. When we receive the print of it, it shall be engraved and illustrated in the Journal. This disease is far more common than is generally supposed, and its existence will account for the poor condition of many apiaries, where non success is imputed to "ill-luck, through a death in the family," or some other absurd superstition.

SCALE OF CHARGES FOR ADVERTISEMENTS.

PAYABLE IN ADVANCE.

	£	s.	d.
Two lines of twelve words each	0	1	6
Per line afterwards	0	0	6
,, Inch of Space	0	5	0
,, Quarter column	0	10	6
,, Half ditto, or quarter page	1	0	0
,, Column, or half page	1	15	0
,, Full page	3	3	0

No Advertisements can be received after the 20th of each month.

Through great pressure, and notwithstanding the addition of two supplementary pages to the body of the Journal, we are reluctantly compelled to defer the publication of several important communications until our next issue.—Ed.

THE

British Bee Journal,

AND BEE KEEPER'S ADVISER.

CONDUCTED BY CHARLES NASH ABBOTT, BEE-MASTER, HANWELL, W. LONDON.

Guarantees to its Subscribers sound practical replies to all queries on Bee Management, and in urgent cases of difficulty, immediate replies by post or telegraph if desired.

ANNUAL SUBSCRIPTION, HALF-A-GUINEA, Payable in Advance.

Special Terms to Clubs and Literary Institutions. *Free by Post on day of Publication.*

[ENTERED AT STATIONERS HALL.]

[No. 10. Vol. 1.] FEBRUARY, 1874. [PUBLISHED MONTHLY.]

DIRECTIONS TO CORRESPONDENTS & QUERISTS.

1.—Write in a legible hand on one side of the paper only.

2.—Use no abbreviations which are not to appear in print.

3.—Keep every query distinct and separate, and give the fullest possible particulars, stating also the kind of hive used.

4.—When requiring an immediate reply, send a stamped ADDRESSED *envelope, or stamps for cost of telegram.*

The British Bee Journal.

FEBRUARY, 1874.

OUR proposed Apicultural Exhibition at the Cyrstal Palace in September next, on the occasion of the Great Fruit and Flower Show, appears to have met with the general approval of bee keepers, and we have not the slightest doubt but that it will be a grand success. Our readers will be glad to hear that the subscriptions to its prize fund, given and promised, amount already to over thirty pounds, and we have every confidence that when it is seen from the proposed schedule of prizes to be offered, that the intention is to make it general and comprehensive, and worthy its happy association with the twin branches of its sister sciences on the great occasion on which it will be held, that it will meet with increased encouragement and approval, not only by bee keepers themselves, but by those also who recognize in bee culture an easy means of ameliorating the condition of many thousands of the rural population of our Great Hive of Workers.

The schedule is based, and the prizes apportioned on the assumption that at least a hundred pounds will be subscribed, and looking at the importance of the object in view, and the great interest taken in the promotion of bee culture by all classes of society, we feel sanguine that that amount, with its varied apportionments, will be largely exceeded.

We have in our council many of the first bee masters of the day, gentlemen beyond reproach, unbigoted, unbiassed, and "above suspicion;" gentlemen with whom it must be honourable to be allied in any cause, but more especially in one, the object of which is so universally approved, and the result of their meetings, correspondence, and comparison of ideas will be found in the schedule, which we now submit to the criticism of all interested in the advancement of apiculture.

PROPOSED SCHEDULE (SUBJECT TO AMENDMENT).

HIVES.

Classes.		£ Prizes.
(*a*)	Best for observation purposes	2 & certificate.
(*b*)	Most improved skep or box hive for depriving purposes	2 & certificate.
(*c*)	Most improved moveable comb hive for depriving purposes.....	2 & certificate.
(*d*)	Most improved hive for use on the storifying principle	2 & certificate.
(*e*)	Most improved hive for use on the collateral principle	2 & certificate.
(*f*)	Most economical (best and cheapest) complete hive on the moveable comb principle, for cottagers use	2 & certificate.

BEES.

(*a*)	For the most beautiful breed of Ligurian bees, the progeny of the queen accompanying them, the beauty of the queen to be of secondary importance	
(*b*)	For the largest breed of honey bees of any nationality	2

NOTE. The bees to be exhibited in glass [illegible] containing combs built by the bees exhibited or taken from their hives.

HONEY.

Classes.	Prizes. 1	2	3
(a) For the largest and best harvest from one stock of bees under any system, or combination of systems, the same to be declared on exhibition	£2	£1	10s.
(b) For the best exhibition of super honey from one apiary	£2	£1	10s.
(c) For the best straw super of honey above 20lbs	£2	£1	10s.
(d) For the best wood super of honey above 20lbs	£2	£1	10s.
(e) For the best glass super of honey above 20lbs	£2	£1	10s.
(f) For the best wood super of honey comb not under 14lbs. nor above 20lbs	20s.	12s. 6d.	7s. 6d.
(g) For the best wood super of honey comb under 14lbs. and not under 10lbs	15s.	16s.	5s.
(h) For the best straw cap of honey, not under 14lbs	20s.	12s. 6d.	7s. 6d.
(j) For the best straw cap of honey, under 14lbs. & not under 10lbs.	15s.	10s.	5s.
(k) For the best glass cap of honey, not under 14lbs	20s.	12s. 6d.	7s. 6d.
(l) For the best glass cap of honey, under 14lbs. & not under 10lbs.	15s.	10s.	5s.
(m) For the best glass cap of honey, under 10lbs. and not over 6lbs.	10s.	7s. 6d.	5s.
(n) For the best display of honey comb in glasses for table use	£2	£1	10s.
(o) For the best exhibition of run honey in glasses of from 5lbs to 10lbs. weight, each produced from flowers, as distinct from heather honey	20s.	12s. 6d.	7s. 6d.
(p) For the best exhibition of run heather honey, in glasses of from 5lbs. to 10lbs. weight	20s.	12s. 6d.	7s. 6d.
(q) For the best exhibition of honey obtained by the use of the honey extractor	20s.	12s. 6d.	7s. 6d.

Cottagers' Classes. Open only to those who work for daily hire.

	1	2	3	4	5	6
(r) For the largest and best exhibition of super honey comb, the produce of 1874, gathered in the natural way by one stock, or united swarms of bees, the property of the exhibitor	60s.	50s.	40s.	30s.	20s.	10s.
(s) For the best exhibition of honey comb, produced as above, in one apiary in 1874, without the destruction of the bees	1 40s.	2 30s.	3 20s.	4 10s.		
(t) For the best exhibition of run honey, the produce of 1874, in glass jars, containing from 5lbs. to 10lbs	40s.	30s.	20s.	10s.		

All the honey and comb exhibited in the above classes must be bonâ fide *the produce of* 1874, *and gathered by the bees in the natural way within the United Kingdom.*

MISCELLANEOUS.	Prizes. 1	2	3
For the largest and best collection of hives, bee furniture, bee gear, and apiculturists' necessaries, no two articles to be similar	£3	£2	£1
For the best drone trap	1 & certificate.		
For the most improved bee feeder, the invention or adaptation of the exhibitor	1 & certificate.		
For the best appliance for introducing queen bees to alien stocks	1 & certificate.		
For the best bee dress, *i.e.*, veil and gloves	1 & certificate.		
For the best appliance for smoking bees	1 & certificate.		
For the cheapest and best supers for general use in an apiary	1 & certificate.		
For the best honey extractor	2 & certificate.		
For the best machine for embossing wax sheets for guide combs, with at least six sheets manufactured by it	1 & certificate.		
For the best exhibition of pure bees wax, the produce of 1874, in cakes of not less than one pound in weight	1 10s.	2 7s. 6d.	3 2s. 6d.
For every novelty or new invention calculated in the opinion of the judges to advance the culture of bees	Extra Prize.		
For the best Essay on the means of obtaining the fertilization of queen bees by selected drones	£3		
For the best Essay on the cause and cure of foul brood	£5		

The foregoing, both as regards the number of the classes, and the apportionment of the prizes is simply suggestive, and is subject to alteration and amendment. As regards the entrance fees to be paid by exhibitors, it is thought the exhibition will be largely increased by making them as low as possible, and it is proposed that one shilling only shall be charged on the admission of each article for competition, which we think will not be considered in any way prohibitory There is some doubt about the proper time to close the entries, and this brings us to a point at which some consideration is required. We are of opinion that every intending exhibitor should send in his name before say the 10th of June, (or earlier if approved,) and that after that date his apiary should be open to the inspection of any other intending exhibitor, holding a certificate of entry, that up to the date of entry, (whenever it may be,) the bee keeper should be

allowed to fashion his stocks as he pleases, but after then, feeding or any other kind of aid should be disqualifying.

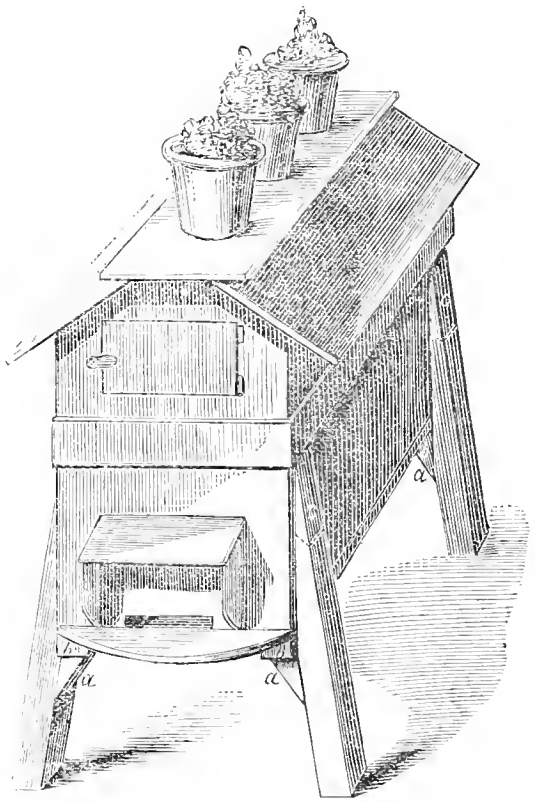
It is not intended to limit the number of entries afterwards, but we think as some criterion, every intending exhibitor should pay his shilling, and enter his own name as a competitor.

Subscriptions promised to prize fund :—

	£	s.	d.
Hon and Rev. H. Bligh	1	1	0
S. Holman, Esq	2	2	0
Editor *British Bee Journal*	5	5	0
S. G. Litteljohn, Esq	1	1	0
R. Symington, Esq	2	2	0
Mr. W. Abbott	1	1	0
C. Atlee, Esq	2	2	0
C. W. Smith, Esq	2	2	0
Mr. J. E. Acworth	1	1	0
C. Percival, Esq	1	1	0
Mr. R. Aston, (bee and drone traps)	0	10	6
S. Wyatt, Esq	0	10	6
A "Lanarkshire Bee Keeper"	0	10	6
A Friend	0	2	6
H.M., Esq	1	1	0
A "Renfrewshire Bee Keeper"	2	2	0
Miss Maud	1	1	0
F. Cheshire, Esq	2	2	0
Wm. Carr, Esq	1	1	0
G. R. Symington, Esq	0	10	6
J. M. Birch, Esq	1	0	1
J. F. Newland, Esq	1	1	0
Mr. James Lee	1	1	0
	£31	12	6

HIVES.

When the body of a hive is completed, the next thing to think of is the stand upon which it is to be placed, and the cover or roof with which it is to be protected. We are perfectly aware that with many persons these are considered objects of minor importance, but as they are essential accompaniments to a complete hive we think they deserve considerable attention. All experienced apiarians agree that bees thrive best when each stock is placed upon a separate stand, but there are few who do not violate the principle by placing them in two's, three's, or four's together on stools or planks, arranged for the purpose; it may however, be taken as a rule, that the materials of which such stalls are made, would, if properly applied, form single stands for as many or more hives, and would give the bee keeper all the advantages attending the isolation of his stocks. Our late lamented friend, Major Munn, insisted that a hive to be perfect should be capable of removal from place to place without preparation, without packing, and without the necessity, on its arrival at a new locality, of procuring either a stand, or cover for it, in fact he argued that both the latter should form part and parcel of the hive itself, and in this we cordially agree, and are glad to see the principle so well carried out by Mr. Neighbour, in his new bar frame hive.



We have somewhere seen a device for a bee stand, in which the hive is supported by means of a framework attached to its sides in such a way that the floor board may be removed at any time without the least disturbance of the hive, and almost without the knowledge of its occupants, and this is the kind of stand we think it would be well to adopt, in all cases where it is practicable. In the engraving the four legs are shewn screwed on to the sides of the hive, each pair of legs may be cut out of one piece of material, about three feet in length by one diagonal cut, each leg has on its inner side a cleat, *a*, cut from the upper end of the leg itself, as indicated by the dotted lines *c*. These cleats are fixed about two inches below the sides of the hives, so that when the floor board is upon them, it will be about an inch below the bottom of the hive sides, but by the insertion of four wedges, *b*, between the floor boards and the cleats, it may be forced into

its proper position. This arrangement will greatly facilitate the examination of stocks in winter, as by removing the wedges, the floor board may be removed and reversed or exchanged, the bees may be examined in their winter's nest without the least disturbance, and bottom feeding carried on with great facility. As a means of affording summer ventilation by slightly withdrawing the wedges, either at the front or back, it is unequalled, the same means also will afford ample means of ingress and egress during the height of the honey season, and will very much facilitate the capture of drones when their extinction is desirable. It will also provide an easy means of introducing swarms in spring or summer, as if the floor board is slid forward a few inches and the wedges tightened, the hive may be laid on its back end, when on opening the full width of the hive, will be found close to the ground, into which they will be bound to enter. "Nothing succeeds like success," and this facility affords another, for as the legs will then be horizontal one pair being nearly two feet from the ground, and immediately over the swarming entrance, a sheet or carpet thrown over them will form an excellent awning, and afford the best possible protection against sunshine or sudden storm, and when the bees have taken possession, the hive may be gently raised and restored to its natural permanent position. In case of removal of the bees from one apiary to another, the legs will be found useful, as when carried on the head by one person they may be held in the hands to steady the hive, or if too heavy, a couple of stakes may be lashed to them, and the whole carried by two, as if on a hand barrow or stretcher.

In situations where it may be necessary to protect the hive from the fierce heat of the sun, or from driving rain, the legs afford the best fixing, for thin boards nailed or screwed to the upper ends of them will form casings for the sides, which, sloping outwards, will most effectually answer their purpose, and they in turn may be turned to good account in facilitating the protection of the back and front of the hive, for if they be cut, longer at the bottom than at the top edges, boards may be fixed to them which will slope outwards away from the hive, thus in front forming a porch, extending along the whole alighting board and effectually protecting it from the weather.

The upper storey or super space may be made of any size desirable, and the roof may of course be made to assume any form the fancy may dictate, but for practical utility, we think that indicated in the engraving will be found the best. Its sides will be about seven inches high, and its centre about nine, the sloping portions, which may be of any width for eave protection, will be surmounted by a nearly flat board, which as a temporary table, we consider an object of considerable importance in an apiary. There are few bee keepers who have not felt the inconvenience arising from having no place but the earth on which they could lay the screw driver or the feeding bottle, or any other articles which it might be necessary to set aside for a moment, often losing them in the grass or amongst the flowers. In making these observations, we are supposing the hives stand in the open, in pairs, or threes, each one on its own pedestal, in the fashion by bee masters considered orthodox. This arrangement of roof will be found to be the most economical and lasting, and the plain flat top, when not in use for other purposes, may be used as a stand for flower vases, or an aquarium. This cover may be made entirely of half-inch yellow deal, which, being only nine inches wide, is much less expensive than pine, but is far more durable, and when well painted will be equal to oak for the purpose. In its manufacture there need be scarcely any waste of material, as what is cut from the sides may be converted into frame bars or ends, or may be used for the top or end portions of the moveable side pieces (the dummies). It should be furnished with a moveable shutter or window, which for convenience, should be at the back of the hive, but is exhibited as if intended to be in the front. The porch is formed of three small pieces of board, it, like all other parts of the hive, is made in the simplest possible manner, economy and utility being the chief considerations, and we are confident that as a whole, the hive is constructed on the soundest principles, both as regards the comfort and convenience of the bees and their masters.

WHAT TO DO, AND WHEN AND HOW TO DO IT.

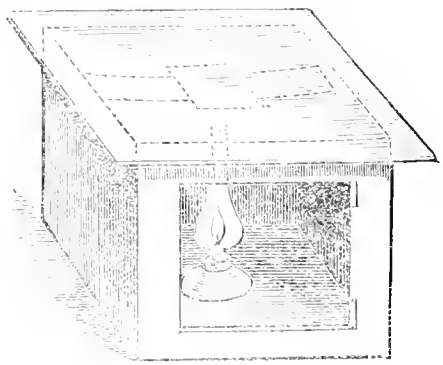
Of all the diseases to which bees are liable during the cold months of winter and early spring, dysentery may be considered the most destructive, and is most to be dreaded, not only for its immediately fatal effects on the present populations of hives attacked by it, but because in many instances, it is but the forerunner of that insidious pestilent malady, "foul brood."

Dysentery amongst bees may safely be considered a preventible disease, and knowing it to be such, we in former pages gave many cautions and directions,

which, if observed, would have rendered its appearance in the apiaries of our readers most improbable. The chief causes of the disease are having an excessive quantity of unsealed honey or syrup in the hive, (generally brought about by late feeding on liquid food,) by want of ventilation, (by which the poisonous vapours of the hive may be allowed to escape,) by the fermentation of the food in the cells through over heating, over moisture, or feeding the bees on food containing fermentive principle, such as moist sugar, ale, sweetwort, &c.; and by excessive ventilation, causing the hive to become so cold that the bees are compelled to consume large quantities of food to enable them to generate sufficient heat to sustain life at a time when the coldness of the outside air prevents them leaving the hive for a cleansing flight, and consequently they burst through dysenteric distension, fouling their hive, creating a filthy stench, and engendering a species of typhus which quickly depopulates the hive. It is a fact not generally understood, that bees cannot discharge or cleanse themselves except when on the wing, therefore the presence of fœcal matter on the combs, or within the hive, is a sure indication of disease. Its appearance about the entrance of a hive cannot always be depended on as indicating actual disease, but it is generally premonitary, and should induce active supervision, to stay the operating causes which produce it. The excrement of bees is usually a brown or yellow liquid, easily voidable, but sometimes by their long confinement through stress of weather, or from some improper condition of the hive, it assumes a viscid mucus condition, which will not easily leave the body when voided, but continues attached to it until the bee alights, which it does most commonly, at the entrance of the hive, where it will cling, either to the alighting board or to the hive itself, giving unmistakeable warning of present or coming mischief. This disease will attack bees in any kind of hive, where ventilation is not sufficiently attended to, or where improper food has been administered or obtained.

For the cure of dysentery, almost all writers agree that fresh food is necessary, and syrup is generally recommended, but it so happens that dysenteric attacks almost invariably occur in cold weather, which in fact may be said to be one of the chief causes of the mischief, for were the bees able to take their flight, there would be no distension of their bodies, and consequently no dysentery, and such being the case, a great difficulty is experienced in getting the bees to take the proffered food. A hive suffering from this disease is generally cold, damp, often streaming with water, and has a very bad odour, and in our opinion these are the first evils to remedy. Here is a problemn—Given cold weather, bees in straw skeps or box hives suffering from dysentery, the combs consequently wet and stinking, and dead and dying bees packed between combs, which are not moveable without breakage. What to do? Some will say that bees in straw skeps do not suffer from dysentery, but we know better, and we know also that when attacked the difficulty in dealing with them is much heightened by the fixedness of the combs, and the abominable cross-sticks through them. In cold weather also bees cannot be dealt with out of doors without risking the loss of many of the most valuable to the hive, *i.e.*, those able to fly, and which would probably do so, and not return again to the hive.

For all such cases, we recommend that artificial warmth be given to the hive, to dry out the superabundant moisture from the combs, and thus in some measure deodorize the filth in the hive, and to enable the living bees to take heart, and endeavour to clear the hive of their dead and dying fellows.



It is now about two years since we found one of our best stocks, containing a most valuable Ligurian queen, in the condition of those mentioned in the foregoing problemn, the thermometer registered 19° only, and it was impossible to open the hive without causing a great loss of bees, so after some experiments we made a box with a moveable front, somewhat in the form shewn in the engraving. The sides and bottom were of wood, the top of iron plate, and inside we placed a paraffin lamp, which would burn for a considerable time. There were holes at the top, under the iron plate, and at the bottom for the ingress and egress of air and vapours, and a piece of tin was fixed on four wires just under the iron plate, and above the lamp as a heat disperser, and having lighted our

lamp, we found after a time exactly how much flame would produce a genial, but not burning heat. Our next move was to place our moribund hive upon it, which we did with fear and trembling, but were delighted to find that it answered admirably. We have used it many times since then, when from any cause a hive has shown signs of dampness, and always with the best results. The bees are rendered active by the warmth, and even on cold days are enabled to take short flights without becoming instantly chilled, and alighting again on the warm plate, they are able to return to the hive and carry on their work of clearing out the dead, &c., while the top ventilators being open, the same heat dries up and carries off the moisture of the hive. We confidently recommend this apparatus in all serious cases of dysentery, and think that with a shallow nadir placed beneath the hive, as a temporary receptacle for the dead and dying cast out of the combs, the thing would be perfect. It is probable that a nadir made like a Woodbury super, *i.e*, with glass sides, but without a top, would, if placed under a hive, give facilities for the necessary flight, and enable many bees, that would otherwise perish, to cleanse themselves and return to their cluster in the combs. In cases where such a nadir is used it will be necessary to remove the bees from it every evening, so that it may be cleaned before being placed under the hive.

During snowy or hard frosty weather the birds called tomtits make their appearance in the apiary, and destroy and devour many hundreds of bees if unchecked. At this time last year we caught eleven during an afternoon in a fall trap, baited with dead bees, it was made with three bricks, and a piece of stout glass for a fall, exactly on the principle of a boy's brick trap, and answered admirably.

About the middle of the month gentle stimulative feeding may commence, but we caution those who intend to begin it, that having begun, they must continue it, or their kindness may have the opposite effect to that intended.

Stimulative feeding consists in supplying the bees with small quantities of food daily, to create activity in their hive, and delude them into the belief that spring has arrived, when they will feed their queen and induce her to commence breeding much earlier, and more rapidly than she otherwise would. This of course causes an increased consumption of stores, and necessitates continued and increased feeding until the bees are able to gather stores for themselves.

Correspondence.

THE MANCHESTER EXHIBITION.

—o—

To the Editor of the BRITISH BEE JOURNAL

—o—

The *British Bee Journal* has done good service to the cause of apiculture, through the well-timed and judicious remarks of "Our Editor," and the capital letter of Mr. Symington, being, I presume, chiefly instrumental in eliciting in the columns of the *Journal of Horticulture*, a full description of the *modus operandi* by which the sensational exhibits of the above honey display were got up, and as this exhibition may be quoted and referred to, to rule and guide similar competitions, the coming season all over the country, it may be of some service to draw forth a general expression of opinion there anent.

Mr. Pettigrew's exertions in getting a show of honey and apiarian appurtenances, "tacked on," to use his own expressive phrase, to the International Horticultural Exhibitions, as well as his efforts in raising the necessary funds for prizes, were indeed worthy of all praise, his well-known interest in bee keeping, that burst of honest indignation at what he supposed to be sugar fed supers, which found their way to Manchester the other year, the jealous care he displayed last spring, to prevent any, the very smallest interference of owners, with their colonies, in a projected competitive test of the value of various hives, all pointed him out as being singularly well adapted, to project and supervise such an exhibition; he did hint the propriety of making the display as fine and as sensational as possible, and in the long run most sensational did it become.

The confessions which appeared in the *Journal of Horticulture* of the 13th November, that these much vaunted Crystal Palaces and hives of comb, were after all but vast "Daws in borrowed plumage," artificial, mere pieces of "Manchester manufacture," produced by feeding, left a most humiliating impression on the mind. It was certainly a great pity that however seemingly comprehensive from the general stand point the phraseology describing the various classes appeared, yet it proved sufficiently vague for parties to consider themselves justified in competing with artificially got up products. In class A "For the heaviest and best hive filled by a swarm of 1873," is certainly loose enough, although honey was well enough understood, still the sticklers for the letter might hold that sugar syrup could have competed. In class D, "For the best glass super of honey comb, the produce of 1873." Here we have the commodity clearly defined, "honey comb;" had Mr. Pettigrew, or whoever framed the prize schedule, but inserted his comma after honey instead of comb, then Mr. Breen would have won, without the shadow of a doubt, as what he exhibited was "The best glass super of honey, comb the produce of 1873," as it stood the honey was confessedly not the produce or crop of 1873.

Mr. Pettigrew advocates cramming glasses with ready made empty comb, which he styles doing it "express," thinking very probably that if the honey was to be borrowed, there was no great harm to

borrow the comb too, while Mr. Breen on the other hand, prefers travelling by the older parliamentary, and adopts my rendering of the punctuation of the text, being resolved that his bees and their master should at least get the full credit of the beautifully constructed combs.

It is all very well for respectable parties, such as Messrs. Pettigrew and Breen to tell us, that neither sugar syrup nor yet glucose, were employed in their artificial productions, but once admit the feeding principle, are we to accept with like confidence the word of honour of every Tom, Dick, or Harry at all exhibitions over the country? Supposing the Manchester exhibition be repeated next season, and the year prove as deficient of honey as last, the surplus contents of stocks to get up such Crystal Palaces must inevitably be the left over sugar syrup of the by past autumn's feeding.

Mr. Pettigrew thinks that the "art of supering," as exemplified at the Manchester Exhibition, will have the tendency to give an immense impetus to the production of such grand Crystal Palace supers, all over the country, and create a great demand for them, I am much afraid the contrary effect will follow. Glasses and supers of honey comb generally realise about double the price per pound of run honey, and why? Because the wealthier classes entertain the idea that in so purchasing, they secure at the enhanced price, the *bona fide* pure unadultered secretions of the current season's flowers, but let it once generally be made known, that such supers are mere manufactured articles, composed either wholly or in part of honey, of uncertain age, or produced by glucose or sugar syrups dependent on the honesty of the manufacturer, then such Crystal Palaces will remain hermetically sealed ornaments, to decorate the entrance hall or drawing room of the bee master, or the show room of the honey warehouse.

Are such huge got up "Crystal Palaces" things to be very proud of after all, when the other stocks of the apiary are robbed of their legitimate contents, *ala* Manchester, to be afterwards fed at considerable expense, and still there is room for more, the International will not wait, says both Mr. Pettigrew and Mr. Breen, the Palace is "bound to be filled," what is to be done? Foreign honey is to be had in quantity, even this scarce year, at and under five pence halfpenny per pound. Now I don't say for I don't know anything of the contents of the Manchester exhibits, but according to the borrowing principle enunciated by the exhibitors there, presume it would be quite in order to employ it too, and at palace price fully two shillings and threepence halfpenny per pound, deducting a good percentage for waste and impurities, would show a fair margin of profit to the palace builder. Do not all exhibitions, tolerating the borrowing principle, instead of furthering the ends intended, have a demoralising effect on the exhibitors themselves, and are deceptive to the uninitiated, the public at large? Is not the poultry fancier, who demeans himself by borrowing sickle feathers from his other fowls, to deck the competition bird, the florist who attaches borrowed foliage to ornament his show blooms, borrows or buys as many additions to enable him to make out his stand and win the coveted prize, on a common level with the bee master, who gets up a Crystal Palace of borrowed or bought in honey; is not the purchaser of the bird, and he who makes a note to purchase the plants, yielding such flowers, and the hive such honey, all alike deceived. Better far a single massive comb bar or seven pound glass, the genuine outcome of the season, than the artificial 87 pounder.

Mr. Pettigrew has come to the conclusion that the land of the thistle is in advance of the rose in the art of bee keeping; the Manchester Crystal Palace glass was of Scottish pattern he says, ferns and flowers on glass in honey comb, and even Mr. Breen's expeditous mode of upward and downward comb building in glasses, has been practised in these Northern regions long ago, and to crown all Crystal Palace building is not altogether new with us. Some years ago I chanced to make the acquaintance of a townsman, who knew absolutely nothing of bee keeping, but had a friend an adept in the art of honey glass production, and through the kindness of the first-named party, I had an opportunity of inspecting quite a collection of such works of art. The two largest I remember weighed a good deal over a hundred weight, and down in regular gradation to a few pounds. They were singularly beautiful to look upon, in some the combs were wrought in straight parallel lines, in others star fashion, radiating from a common centre. The apiary was situated at a distance in the centre of a great heath country, which coupled with what I knew of the collecting powers of combined swarms, together with an excellent honey season, was sufficient to my mind to account for the transcendent display, and I never doubted their genuineness, until the return of my acquaintance from a visit to his friend, when he told me the largest palace I had admired so much was a mere nothing to what he yet intended aiming at, that he told him he could easily fill a glass case with comb as large as the railway carriage in which the two worthies were then travelling, that it would be a nice thing to have one flavoured with citiron, another lemon! When he reached this climax, I called out to him to "hold enough," and said if his friend was the "real Mackay" his honey could have only one flavour, the smack of the highland heather, if he was an imitation honey manufacturer, it was a branch of business I had not the smallest interest in, and I came away pitying the dupe who had purchased at a long price the largest "Crystal Palace."

A RENFREWSHIRE BEE KEEPER.

"WHEN DOCTORS DIFFER."

DEAR SIR,—A review of the past season and of the bee literature contemporary therewith, brings to my mind a very old proverb, and one that is peculiarly applicable to the instructions that have from time to time been given for the guidance of amateurs, by you in the columns of your valuable paper on the one hand, and Mr. A. Pettigrew in those of the *Journal of Horticulture* on the other.

"When doctors differ who can decide."

The past has been a very peculiar season for bee keepers, indeed in my small experience such an one has not occurred before, and from older apiarians I learn that just such a year as 1873 has not happened

in their remembrance. From some cause or other while honey bearing flowers have been most abundant honey itself has been very scarce. Bees have been able to gather little beyond the supply necessary for their daily requirements, and at the time when stores should have been accumulating, there came a total failure and consequent inactivity amongst bee populations generally. To those who were sufficiently observant to note this state of things at the time of its occurrence, it was very evident that something should be done to avert disaster in the autumn and winter, and for those who like myself had not sufficient experience to guide them, there was only one course available, and that was to seek advice and teaching "of those who were older than we," "of many far wiser than we," and fortunate indeed were they who like myself enjoyed the benefit of your advice. The circumstances were these :—At the end of July, the honey yield had ceased, and as a natural consequence breeding was also at a standstill, and the probabilities were that bees would be scarce just when they ought to be abundant, and stores scanty when they should be ample. Your advice was to feed at once, to stimulate breeding, and so insure plenty of bees for the winter, to feed slowly that perfect evaporation might be provided, and to feed thick food so that less evaporation should be necessary. Mark the consequences. My hives are strong in bees, heavy in stores, clean and dry in the combs, and as yet have no trace of dysentery. Now for the opinions of t'other Doctor.

On page 244 of the *Journal of Horticulture* Mr. Pettigrew says that feeding for promotion of breeding is not advanced bee keeping, that when feeding is practised, the syrup should be thin, and that the feeding should be rapid, indeed he says that feeding cannot be done too quickly. As I did not follow his advice, I cannot tell what the effect would have been on my bees, but from his letter on page 324 of the same journal, I can gather that his bees were not quite up to the mark for wintering, or whence the necessity for the purchase of condemned bees from Lincolnshire to strengthen his stocks. Is that advanced bee keeping? If so, I fear that the bar to my advancement is great, as I should not know where to procure the necessary surplus population in my time of need. But even if I were able to do so I maintain that the addition of a lot of old and injured bees to my stocks, *a la* Pettigrew, would not be a tithe of the advantage to them that the possession of young unworked bees reared *a la* Abbott would be.

The early spring flights, from hives strengthened by the additions of old bees will decimate their ranks, but the young autumn bred bees will be able to stand a considerable amount of work, and they will not perish before there are spring bred bees to take their places, and so the hives will prosper. This to my mind looks far more like advancement. And now as to Mr. Pettigrew's plan of feeding (thin food rapidly given.) Does he I wonder know anything of dysentery, its causes, and consequences, and if so how can he recommend a course that is almost certain to produce that very fatal disorder, so intimately associated with that fell disease, "foul brood?" Almost all writers agree that overabundance of moisture in the stores of the bees is the great cause of dysentery, and what is so likely to produce this as feeding to them food containing a superfluity of water so rapidly as to render proper evaporation impossible. It may be that Mr. Pettigrew's manner of administering the food is such that it cannot be taken faster than it can be properly prepared and sealed up by the bees, but *Cui Bono* when thick food and the bottle are at command. I hope Mr. Pettigrew will pardon my very evident animosity to his writings, for of himself I have the highest opinion, but I cannot quietly submit to the promulgation of error by any one, so long as I can use a pen in the cause of truth and advancement.

Mr. Pettigrew has from year to year favoured the public with what he calls a balance sheet, shewing his profit from bee keeping. I have seen that published in the *Journal of Horticulture* for the present year, and am rather amused at the figures given to produce the result. He gives us receipts *v.* expenditure, and calls the balance in favour of the former "profit." It is the first time I have seen a balance sheet where *stock* has not been taken into the account, and I would ask Mr. Pettigrew—Was your stock in trade of exactly the same value in October last year, as it was in October, 1872, and if not why is not the difference shown, either as adding to or reducing the profit? I can show a better profit than he, although my expenditure has been in excess of my receipts, for my profit is in the increased value of my bees, hives, and bee furniture generally.

I am sorry to find that Mr. Breen has taken exception to some of my remarks in your issue of October, with reference to the hives and supers exhibited at the Manchester show. I must express my regret that such is the case, as I certainly never intended to insinuate that he had acted dishonourably or unfairly. My only object in assuming how such a super as his could have been filled, was to elicit how it had been done, and I am pleased that the explanation necessary has been freely given.

Whilst upon this subject, I would remark that if Mr. Pettigrew's theory of the production of honey be correct it would be almost better to give the bees glucose with which to fill their hives and supers, than to give them honey pure and simple, as in the former case they would have all the labour of converting it into honey, whilst in the latter they would only have to carry aloft and store it. To my mind, Mr. Pettigrew's ideas on the subject of honey only go to prove the absurdity of his advice as to feeding, for whether it be honey or syrup, the thinner it is when they gather it or have it fed to them, the more they have to manipulate it for the purposes of evaporation and consequent thickening, before they can safely store it for future requirements.

R. SYMINGTON.

THE STEWARTON HIVE AND SYSTEM.

SIR,—Your anonymous correspondent on page 138 does not bring a single fresh argument to uphold his shallow boxes, but tries to make a little capital of an expression used by me on page 76. Where speaking of the exploded collateral system (not the supering or Stewarton system as stated by your anonymous correspondent) I said, "The bees instinct gives the lie (to the collateral system) when applied to them." This

expression I made advisedly, it is perfectly gentlemanly and parliamentary, and is the most expressive short word for the meaning intended, to be found in the English dictionary. I accept your anonymous correspondent's apology for speaking so unguardedly about the Manchester School, as that school recommends a good sized but deep bar frame hive as the *ne plus ultra*.

I am not going to draw my steel against your anonymous correspondent, and I am sorry if I have hurt him, but I never quarrel with anybody, and lately I have heard a great deal about "Peace on earth, good will to men."

WILLIAM CARR,

Newton Heath, near Manchester.

EXHIBITION OF BEES AND HONEY AT HORTICULTURAL AND AGRICULTURAL SHOWS

—o—

SIR,—I am pleased to hear that you have made arrangement to have a great show of bees, honey, and apiarian furniture, at the same time as the next autumn Fruit and Flower Show at the Crystal Palace, Sept. 8th, 9th, and 10th. I have not the least doubt it will be a great success, as such exhibitions wonderfully increase the interest in bees, and there is a great deal to learn from them, Where would our great farmers be now, if it had not been for Prince Albert the Good's encouragement of Agricultural Exhibitions? Why farming on a large scale is quite a different business to what it was when he became the husband of England's Queen.

Has not bee keeping (which is yearly an important branch in farming), gone on with all the other improvements, and with bar frame hives, we can now make the bees do almost anything we please, swarm them when we like, or not allow them to swarm at all, and so produce three or four times the quantity of honey. Make them to produce quantities of drones, or not allow them to produce a single male bee, nay, we can now even select to breed only queens and drones from the most prolific and beautiful mothers, and so improve the bee with as much certainty as a farmer can a horse or cow.

With the honey extractor, we can now take three or four times the quantity of beautiful run honey, even out of old combs partly filled with pollen and brood, not mixing it altogether as is usually done when taken out of straw hives, but as clear as if it came out of virgin combs, and the saving of combs alone in one year will repay the cost of a machine.

In 1864 I exhibited my bees at work at our Great Agricultural Show at Middleton, near Manchester, and they were such a very great attraction that the following year I gave some prizes for bees, hives, and honey, and fixed the prizes to be given, viz.:—For the best make of bar frame hives containing bees at work; for the best honey combs in bar frames, collected in 1865; for the best honey combs in any other make of hive collected in 1865; for the best bell glass filled with honey, collected in 1865. There were no less than thirteen entries for these prizes, and the crowds of people surrounding them all day were so very great, that it required two men to be constantly asking the people to be kind enough to move forward.

The great interest taken in this exhibition of bees at work by all classes of society, convinced the committee of the Middleton Agricultural Show of the large pecuniary benefit they would secure by offering prizes for bees, honey, &c. This will be the tenth year prizes have been given, and the interest in them is greater than ever; numbers go to the show from a great distance on purpose to see the bees. The prizes amount to eight pounds. I believe the Middleton Agricultural Show is the third in England, and distributes in prizes more than £1,100 at the annual meeting. If the Royal Agricultural Society would offer prizes for bees, &c., I think they would do much good.

In 1867 I exhibited my bees at work, honey, hives, &c., at the Manchester and Liverpool Agricultural Society's centenary celebration, held at Manchester, August 27th, 28th, and 29th. I had my bees on a table in a tent in the centre of the show ground, and allowed them to go in and out as they liked, and I did not hear of a single person being stung. On the side of the tent where the bees came out I put two posts about three yards from the tent, and tied a rope from the tent round them, so that the people did not pass close to the bees alighting boards. The tent was crowded by visitors all the three days, there was nothing at the show that was a greater source of attraction, and the society gave me their large silver medal, with a suitable inscription. The receipts for admission to that show for three days amounted to £2,850.

In 1869 the Royal Agricultural Society of England held their annual meeting at Manchester from July 16th to 24th, and I exhibited my bees at work, honey, hives, &c. They were in a tent, the same as at the Manchester and Liverpool show, in the centre of the ground. The bees went in and out as they liked, and one stock I had there gained 153 ounces whilst at the show. I merely put two posts and a rope to keep the people from the entrance to the hives, and I did not hear of anyone being stung except a carter's boy, who with some others was looking at the bees flying out, when he pulled off his cap, and made a sweep at a number of them, drawing the cap to his breast, when he exclaimed to his companions, "Aye! I have got them," and they flocked round him to see the treasure he had secured. When he lifted his cap a little from his breast, some of them escaped, and one of the bees flew right at him, and stung him just below the eye. It was amusing to see him scampering away, and I did not again hear him say, "Aye! I have got them."

At our Great National Horticultural Exhibition, held at the Manchester Botanical Gardens, where they annually give away more than £1000 in prizes, I have exhibited my bees at work, honey, combs, &c., for several years, and they have always been a very great source of attraction, having much increased the society's funds for admission. The crowds of fashionable people round them for a week have been very great indeed. One day I was standing outside the crowd, and saw an old country bee keeper, whom I knew, trying for a long time ineffectually to get to the table to see the bees, but there were so many before him he would have been obliged to have waited a long time, so I heard him say, "Hang it I will see them." He went away for a few minutes, when he came blustering up again, calling out when he got to the crowd,

"Now then! Now then! we will let them out." The words were like magic. The crowd backed away from the table, and he began at one end, and leisurely examined everything. When he got to the other end he said, "I see they are going out through the tent." When he got to the outside of the crowd, I put my hand upon his shoulder, and said, "I think you let yourself in." "Well! he said, I was determined to see them, and I could not get near to them without saying, Now then! Now then! We will let them out."

WILLIAM CARR,

Newton Heath, near Manchester.

NIELSON BEE HIVE.

DEAR SIR,—I beg to offer you my best thanks for the pleasure I have had in reading the *British Bee Journal*. Your columns of queries and replies, I find at once interesting and useful, and it would I am sure, be still more useful to me were it not for the radical difference which appears to exist between the many sorts of bee hives favoured in England, and those which are considered the best in this country.

I am bound to say that the bee hives we use appear to me much better than the best I have yet heard of as being in use in England, although perhaps ours are deficient in some excellent qualities, which the English hives possess. I have seen the Woodbury hive, complete, in the possession of my friend, Mr. Wood, of Nyborg, and it is really very pretty, but I would rather not use it, as I do not like the principle of the moveable crown board. In Mr. Neighbour's book "The Apiary," pages 163 and 167, "On taking out frames with combs," I found arguments enough against using this kind of hive, or indeed any hive involving the use of the moveable crown board I observe that you are considering the question of an improved hive, and this has furnished me with an excuse for sending you a rough sketch of the hive which I have used for two years past, and which, according to my experience is the easiest managed hive that has been constructed. Its great advantages are, that at one glance the bee master can inform himself of the state of the hive, and if he wishes to make a close examination of any particular frame, this can be done in a few moments, and without much disturbance to the bees, and consequently with a minimum of stings. If a frame of honey be required for the breakfast table, it can be taken out in a few minutes, without the use of veil or gloves, a puff of tobacco being sufficient to reconcile the bees to the robbery, or at all events keep them from avenging it.

This hive has many other advantages, which no doubt you will see if I have succeeded in making my very rough sketch intelligible. On the other hand I am bound in honesty to admit that this hive has many enemies, who sink it beneath all criticism. I however, speak from experience, and I know many others in this neighbourhood who think as I do.

The man who made my hive is a joiner named Nielson, and who amuses himself with bee keeping on a somewhat large scale. He has now I believe about 60 or 70 families. I have therefore given his name to the hive, and if there is any merit in it, it belongs to him. I have given him an order to make me another on the same principle, but with many improvements as to ventilation, and the like, suggested by the Bee Journal.

I have a hive on the original Dzierson's principle, a high narrow house, contructed to take the frames out at the back. I hung the house on a Salter's balance, and put a swarm in on the 30th June last, and I have recorded the daily weight up to September, and since weekly, up to the present time. Would a copy of this interest you? We have had a very bad year.

JOHN R. CRIDLAND.

NyBakkehus, Kjobenhavn.

Mr. Neighbour's instructions "On taking out frames and comb" are certainly not calculated to inspire amateurs with confidence in the management of bees in the Woodbury hive. The difficulties, however, are not caused by the moveable crown board, as suggested by our correspondent, but by the inconvenient arrangement of the frames, which we have (we think) sufficiently criticised in former pages. Hives that open at the top have in our opinion many advantages over those that open at the side or end only. In these latter hives, to get at the frame of comb farthest from the opening, the operator is compelled to remove every other and unless he is provided with a second hive, must place them all outside, without protection, whereas in a properly made crown opening hive, this very inconvenient and dangerous necessity is avoided (see page 99). The drawing and description sent have so much in common with other side or end opening hives, of which those forwarded by Mr. Wood, of Nyborg (now in the hands of the engravers), are such excellent specimens, that we do not think we can afford space for them at present. We, however, tender our best thanks to Mr. Cridland for the trouble he has taken in preparing them. The daily record of the progress of the Dzierzon hive, must be interesting, and we hope will be sent. ED.

VENTILATION.

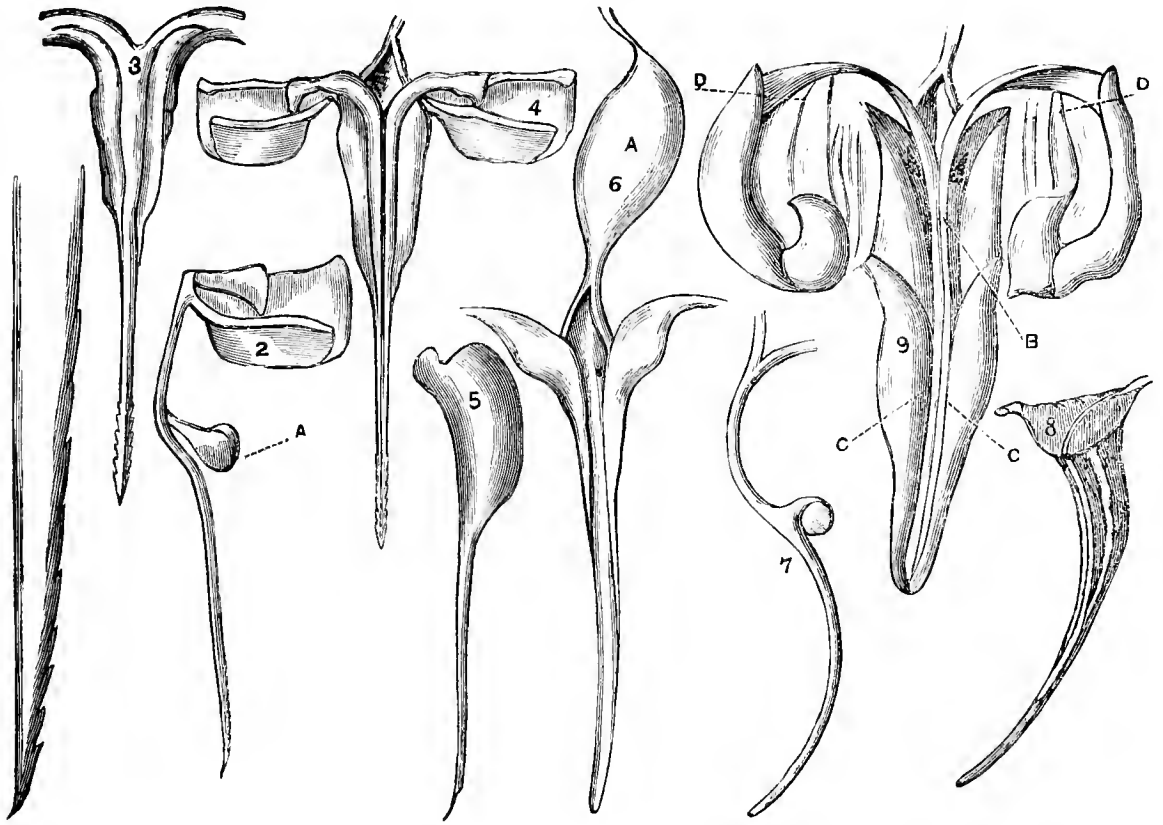
DEAR SIR,—The following plan of ventilating I have found to answer very well for wooden hives. Over the feeding hole in the centre of the crown board I place a piece of perforated zinc, and on this a half dozen thicknesses of thick white blotting paper, with a hole cut in the centre to correspond with the hole in the crown board. Upon the blotting paper is placed a 6in. bell glass, without a hole, the moisture then rises and condensing on the glass, runs down and is absorbed by the blotting paper, rendering it quite unnecessary to take off the covers to wipe the glass or in any way disturb the bees, and keeps the inside of the hive perfectly dry. I do not know if this is new, but if you think it worth while, you can publish it in the Journal for the benefit of British bee keepers.

J. CLEVER JONES.

Market Drayton.

STINGS OF BEES.—IMPREGNATION.

SIR,—In most anatomical descriptions of the sting of the honey bee that I have read, I find it asserted that there are two darts enclosed in a sheath, which are projected by the bee when stinging. I fear the first describer who stated this could not have made very accurate observations, and subsequent writers have without investigation, taken the previous statement as granted. I have dissected many stings, and do not hesitate to affirm that the above description is incorrect. The whole instrument or sting of the both worker and queen is formed of three pieces



No. 1, Apex of worker's sting, X, 300 diam. No. 2 *a*, horny muscle of worker's sting, 25 diam. No. 3, shewing sting of worker with sheath, 25 diam. No. 4, complete sting of worker, 25 diam. No. 5, side view of worker's sting, 25 diam. No. 6, sheath of queen's sting, shewing poison bag, A, 25 diam. No. 7 horny muscle of queen's sting, 25 diam. No. 8 queen sting. No. 9 queen's sting and appurtenances, under side, C, ovipositors.

of which the part hitherto called the sheath forms rather more than half of its upper tubular surface, (fig. 3) the remainder being closed along its whole length by two slender horny muscles, (fig 2) usually styled "darts," which are joined to the larger part (fig. 3), by longitudinal sutures, the whole forming a perfect conduit pipe (fig. 4) rather flat on its lower side, through which the poison is projected. Reference to fig. 8 will shew the poison bag and duct communicating to the hollow of the sting. Each of the two slender muscles, (fig. 2) have in the worker extending from their points about ten serrations, which fit accurately into corresponding serrations on the remaining portion of the sting. Proceeding upwards for about two thirds of its length, we find a considerable bulbous expansion of the sting, enclosed within which the muscles I have been describing, swell out into two kidney shaped expansions (fig. 2 *a*) which would of themselves prevent any propulsion of one part of the sting before the other, supposing that the serrations, locked so firmly together, were not enough. The length of the worker sting is about one tenth of an inch, varying a little in individuals, it is slightly curved at its point, for about one sixteenth of its length, and is barbed as shown in fig. 1. The queen's sting is somewhat larger than the worker's, and curved towards the ground as she stands, like a scimitar (fig. 7); it is also more obtuse at the point than the workers, and only a little roughened near the apex, scarcely sufficient to be called barbed. Dr. Carpenter states that the "sheath is a horny case, formed by the prolongation of the last segment." This is not so, the sheath or sting being totally distinct, and lying on the inside of the last segment, when the bee is at rest. The learned doctor's description is otherwise most inaccurate, and I cannot think it to be the result of his own investigation.

The verifications of these observations is easy by anyone accustomed to delicate manipulations, and the queen's sting being largest, it will be found easiest to work upon. After carefully separating the last segment of the abdomen, the sting with its appurtenances will be seen as fig. 9, and at the part marked *b* a fine needle may be passed underneath the pair of muscles (fig. 9), and then if gentle upward traction is made on the broad muscles, *d*, the long slender muscles (fig. 7) will draw out from the point, when the three portions of the sting will appear as figs. 6 and 7. I am unable to discover any specific difference in the stings of the English and Ligurian bees; individuals vary slightly, but I doubt if any microscopist could separate a mixed series of the stings of both varieties. For the drawings I am indebted to the assistance of my friend, Mr. Charles Dawe. With regard to the power of the queen to sting, it has been so abundantly proved that she does not do so on the human subject, that I confess I had a doubt whether she could sting at all, or in

fact had any poison in her. So to settle this point, I extracted the bag from a Ligurian queen, who had been dead about two months, and having distended the dried bladder by twenty four hours soaking in water, I placed it on my arm, and pricked through it with a needle into my skin, just sufficient to draw blood, then squeezed the bag with the needle over the wound, and immediately wiped off the surplus, waiting the result. In the meantime with a clean needle I made a similar wound about two inches from the first, with the intention of comparing the two effects. Half an hour afterwards there was no mistake that the first wound was poisoned, for there was a swelling much like a large flea bite, half an inch long by a quarter broad, as well as an inflamed surface of about two superficial inches of a vivid red. For another half an hour it smarted, but without the pain of an ordinary worker's sting, but of course this may be accounted for by the fact of the poison having been dried, and probably lost much of its virulence, in addition to which there was no injection into the wound, as would have been the case had her majesty been alive, and on venomous intentions bent. I may mention that the second (clean) wound only very slightly inflamed, and showed a marked difference from the other.

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My namesake, the great anatomist, John Hunter, succeeded in impregating the eggs of a bee by spermatozoa, taken from the spermatheca of another bee (Homes Lectures on Comparative Anatomy, vol. iii. page 370). What has been done before can be done again, and this opens out various problems.

An egg freshly laid in a drone cell artificially impregnated from the spermatheca of a freshly killed queen, or better still direct from the vasa deferentia of a drone. What would be the result?

1st.—If left in a drone cell?

2nd.—If removed to a worker cell?

3rd.—If removed to a queen cell?

Mem. Try the experiments and learn!

An egg of Apis Mellifica artificially impregnated from Apis Ligustica or an egg of Apis Ligustica artifically impregnated from Apis Mellifica. Query the result? If hybrids be produced, what should stay the practical apiarian from obtaining any number of hybrid queens by properly manipulating with a Ligurian drone on otherwise infertile drone eggs laid by his English queens, removed into previously emptied queen cells, or into worker cells, supplied with royal jelly, as by Huber's experiment, confirmed by Kleine, such has been found to ensure any particular egg or eggs being reared to royalty.

Some persons will perhaps doubt the possibility of fertilizing eggs after they have left the body of the mother bee. Independent of the successful experiment of my great namesake, I do not see any insuperable reason why it should not be possible, the ova of fishes are largely artificially fertilized, both as a commercial measure, and by way of experiment. Moreover those acquainted with the anatomy of the queen bee, (bearing in mind the rapidity with which eggs are deposited) will know that the fertilization is but the act of a moment, and precedes their expulsion but an infinite short space of time, and I am told the spermatozoa can be seen with the microscope on the ova after their expulsion. This fact I have not had an opportunity of verifying, but intend to do so on the first opportunity. Here is work for experimentalists worthy of their attention. The successful solution of these problems might lead to physiological researches, valuable as bewildering in their importance in all animated nature. Scientific bee keepers often require to ascertain the fact of the impregnation of their deceased queens, but know not how to get at it. Indeed to most people the dissection of so small an insect seems far beyond their powers; it is, on the contrary, not so difficult as it appears, only requiring a steady hand, attention, and patience, to ascertain all that is usually required. The tools absolutely necessary are but a couple of needles and a moderately good microscope, not necessarily a dissecting one, although that is an advantage.

On a future occasion I should be happy to give in our Journal a few plain instructions on this subject if thought serviceable, or for scientific purposes, to ascertain the fact of any queens impregnation by a *post mortem* examination, which is as readily made on an old dried queen as on one recently deceased; in fact all my observations have been made on queens dead some weeks or months, which were kindly supplied by our editor, and I may here say I should be glad of a few more if any of our readers could oblige me.

JOHN HUNTER,

5, Eaton Rise, Ealing.

A NEW HIVE.

—o—

Dear Sir,—In the first place allow me most heartily to wish you a happy new year, and your Journal as wide a circulation as it deserves. May the bees of the ensuing season produce sufficient honey to cure every sting they inflict upon their friends, and sufficient profit to handsomely repay every bee master for his pains. May "live and let live" soon become the motto of every bee keeper in the world, nor may the time be far distant, when no man will be able to exist on any other principle. If I believed bees to possess the intelligence with which some of their historians have accredited them, to them would I say gather into supers all the honey and wax you can spare for your enlightened friends, and reserve your stings and your venom for your benighted enemies. One might almost imagine an unfortunate occupant of a wet straw skep exhorting his comrades in the well-known words of Paul, "Let us eat and drink, for to-morrow we die," concluding his address on the superiority of the depriving system, with some such peroration as, "If I were a Ligurian, as I am an English bee, while an old straw skep existed in my country, I never would gird up my sting, never! never! never!"

But to business. I claim for the hive, which I call the "V" hive, of which I enclose you a rough description, the following advantages:—

1st. The advantages (whatever they may be) of being able to super and ventilate the hive, and to feed the bees it contains, at one and the same time, either with syrup or barley sugar.

2nd. The impossibility of the floor board becoming foul, from the fact that no floor board exists.

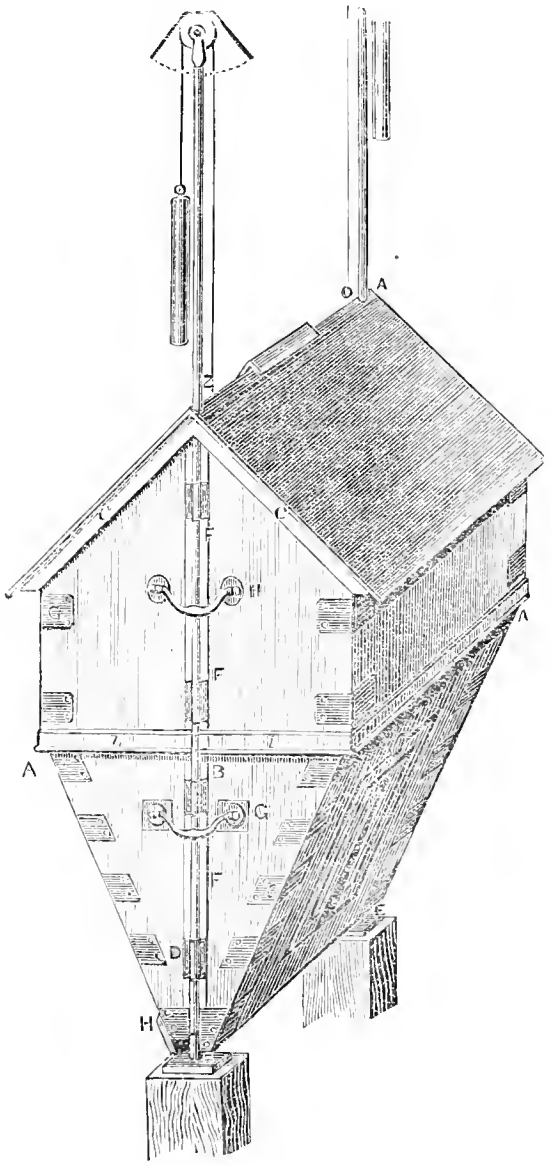
3rd. The ease with which the super cover, (weighing about 26 pounds) can be instantly removed, and replaced with less exertion than would be required for lifting a pound weight.

4th. The facility afforded, from the peculiarity of their shape, in the removal of the frames from the hive.

5th. The fact of being able to replace the frame in the hive, without the possibility of injuring the bees.

6th.—The largeness of the windows, enabling the bee master more distinctly to observe the manœuvres of the bees, and the state and temperature of the hive.

The simple and effectual method of cleansing the hive, by the letting out, from the bottom thereof, dead bees and all other debris, by the withdrawal of the two triangular slides.



8th. Its great strength and durability, owing to its peculiarity of shape and construction, rendering it almost impervious to atmospheric influences.

9th. The impossibility of new brittle combs falling down in the frames of this hive during removal, or the process of weighing, the combs made in these frames being capable of sustaining a much higher degree of temperature, before falling, than the combs built in any other description of hive.

10th. The economisation of space, and consequently of heat, effected by the peculiar shape of this hive and frames.

11th. The great ease with which a full super may be exchanged for an empty one.

12th. The impossibility of the bees so firmly propolising the frames in the hive as to render their removal difficult.

13th. The security and ease with which this hive can be packed and sent long distances, whether wholly or partly filled with new or old combs, without injury to either the hive or its contents, arising from the non-shifting of the frames, either vertically or laterally.

14th. The readiness with which the moisture may be collected, and removed from this hive.

S. WYATT.

Westbrook, near Tenbury, Worcestershire.

This Hive will be further described.—ED.

INTRODUCING QUEENS.

It may be as well to premise at the outset that there is no royal route to the hive throne, the bee keeper may exert all the diplomacy of which he is master, and yet see his nominee ruthlessly poniarded before his eyes, while a queen, by the merest accident, finding her way into a queenless stock, may be most graciously received and accepted. Can it be otherwise? when we so often find not an alien sovereign, but their own justly prized queen, ignominiously deposed and put to death by her own offspring, in those mysterious regicidal attacks, which are among the deeper depths of apiarian science.

Take the case of an exceedingly handsome Italian monarch, which reigned at the head of my Unicomb Observatory stock, during the by-past season. One rather genial day in the beginning of October, I chanced to withdraw the warm woollen covering, and found the thermometer registering a very low temperature, the outlying pickets already chilled, and the stores all but exhausted. Summoning my assistant, about five minutes sufficed to transfer the four frame divisions to their winter quarters, a deep wooden box, and in so doing we noted the activity and well-being of her majesty, of whom I was not a little proud, she having been pronounced in summer, by several of the most experienced apiarians, as the largest and finest they had ever beheld. Some two hours afterwards I happened to cross from the garden walk to the sloping grassy bank on which my observatory stock

stands, to ascertain if a little cluster of outlying workers, grouped inside the porch of the large ornamental octagon cover, in which the stock is placed, had gone in all right, and when turning away, my eye was attracted by a bee, much too large for a worker, crawling into a tuft of grass beneath the low drooping branch of a large yew, which effectually screens the particular colony from the northern blast, and on a closer scrutiny, it proved to be no other than my much valued royal lady. Too hastily I blamed the clumsiness of my assistant in shaking her off the combs, while carrying the box from the table to the cover stand. The warmth of my hand speedily revived her to her wonted sprightliness, and while opening the back hinged portion of the cover, I pictured to myself the joyous welcome in store for her, but listening in vain for the hum of their disturbed commotion : I concluded they had not missed her yet. After all, the surprise I anticipated for the bees, turned out a still greater one for their master, for on setting her down between the frames, the nearest workers sprang upon her like tigresses, and in a twinkling she disappeared from my view, a frame was at once lifted out and looking down there on the floor board was the familiar black ball. Taking it from the box I placed it on the palm of my left hand, while with the right as I walked away, I cautiously removed one by one her savage assailants, till she alone remained, but alas! there lay my favourite queen, quivering in the pangs of her last agony. Why had I not suspected she was a wandering outcast from her throne and kingdom? how many a nuclei and stock did I possess which would have bid her welcome? Why had I interfered with her at all? better far the chilly air of that autumnal evening had gradually benumbed her into forgetfulness, and the old yew tree would the coming spring, shed down its blossoms on her self-selected tomb, while her offspring, guiltless of the horrid crime of matricide, would, dusted white as millers with the pollen showers, have sung her requiem, were all vain regrets.

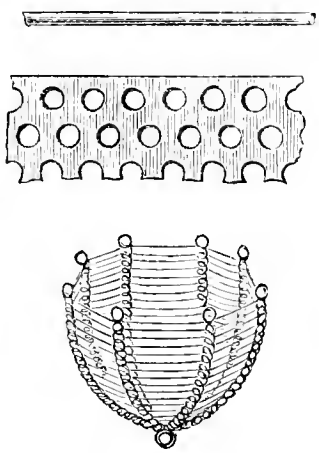
About this case there was something most mysterious. The queen had not diverged from the limits of the central brood bed (the German theory to account for such phenomena), there was not in the stock a single egg, from which they could raise a successor, and yet they appeared perfectly satisfied and quiescent, she too was amazingly prolific, in the hey-day of her prime, and not like some aged decrepids I have before now possessed, whose waning powers would seem to justify their deposition, producing an almost exclusive male progeny, and yet they were tolerated and preserved. Neither was there any robber or stranger bees on the wing, entering the hive to account for the encasement, and to crown all, they shortly thereafter joyfully accepted an imported successor, their whole procedure seeming to me most inexplicable.

But to come to the introducing alien sovereigns. The reigning monarch has to be deposed, consequently in the words of Meg Dodd's famous receipt we must first catch not our hare, but our queen. With moveable bars or frames, it is a very simple proceeding, with fixed combs by driving, not much more difficult after a little practice, the mere novice can try the fungus charged fumigator, and the sight of his irritable little friends laid out helpless like so many black currants, may infuse fresh confidence in his future dealings, but generally speaking, after a time, his tube, like mine will rust from disuse, the queen with a dozen or so workers can be placed on a piece of honey comb underneath a tumbler, raised a little on one side with a coin, for fresh air, should several be dethroned at the same time, it is requisite to mark on the paper on which the tumblers rest, the hive of each in case any require to be replaced. When the queen is missed, and the usual commotion ensues, I have met with no better cage to hold the new queen then the pipe cover one, introduced to the notice of your readers by Mr. Raynor, in his very interesting communication in the Nov. number, I must say I never had the same luck in finding the queen uppermost, so readily on top of pile of comatose bees, as he neither did I use to think the effects of the stupifying process innocuous much less beneficial.

To the late T. W. Woodbury, Esq., Exeter, was I too indebted for a present of this queen cage, when first he began to employ it, and I cannot here allude to that eminent apiarian, without bearing my humble tribute to his memory, and publicly expressing the debt of gratitude I owed him, for the many valuable ideas scattered over a lengthened correspondence from the introduction of the Italian bee in the season of 1859, down to shortly before his death, my admiration of his indomitable perseverence alike displayed, in fighting out that bee plague, "foul brood," simultaneously with myself, and his acquiring the German language, expressly to study the *German Bee Journal*. What an auxiliary would he have been to the *British Bee Journal*, and how much is it to be deplored that he passed from the present scene, without being spared to publish his projected work, which I feel confident would have included everything valuable in British, American, and continental bee literature, and have proved the text book on bee keeping; remaining an enduring monument of the beauty of his style, as well as the soundness of his apiarian knowledge.

After repeated experiments with the plan referred to by Mr. Raynor, of pressing the cage containing the queen into the comb, I was at last forced to abandon it altogether, for the following reasons, so placed in removing the adjoining comb or frame, did it rub against it, it tilted over to one side slightly, and the workers got in and sealed the fate of the queen, and there was nothing to prevent them gnawing an entrance through the bruised comb edges to get at her, but the worst feature of the plan was, before the queen could be set free, the hive had to be opened and disturbed, and every bee keeper knows at such a moment, his favou-

rites are in their most irritable mood, those on the side of the frame usually shift, consequently the queen, on obtaining her liberty, may in the *melee* meet with a worker who had never seen her before, looks upon her as an interloper, pinions her, and at once gives the signal to encase the prize, and many a valuable queen have I found fall a victim in such circumstances, causing me to employ the same cage after a different fashion.



On placing the queen in the cage, I confine her by setting over it a little square of perforated zinc, (see accompanying sketch) through which the cage eyes are passed, and it is kept shut by a bit of stocking wire run through an eye on either side, any little stopper does equally well, strong prickles from the nearest goosebery bush in a garden come readily to hand. The body of the cage is then set in the bung hole commonly found in straw hives, in wooden hives without one it is easily cut, a florin from the pocket and a pencil describes the circle on the middle of the central slide, and a pen knife cuts it out quicker than one can set off to the house for a brace and bit. Such apertures come in useful again for bottle feeding, the zinc cover prevents the cage slipping into the hive, and by covering it over with three or four plies woollen cloth keeps the queen warm and comfortable. On the third day I usually proceed to set her free. After removing the coverings, the wire is drawn, and the zinc top raised. Her majesty is too much occupied holding a communication with the workers at the bottom, to think of escaping, the cage is raised gently and inverted, the woollen cloth thrown over to keep in any odd bees, by this mode, on the liberation of the queen, she comes in contact with the bees that have been employed in feeding her, and are familiar with her presence, who form a body guard around her, and the royal progress over the combs is an uninterrupted ovation, the inmates of the hive having been neither disturbed nor irritated, the reign commences most auspiciously, and I very rarely, if ever, meet with a failure. In nucleus boxes and weak hives with a sparse population, queens so caged might run the risk of being chilled, so I vary the procedure by cutting a small bit of comb out, sufficient to admit the lided cage, a tight fit in the centre, when the queen is to be liberated, the cage with the clustering bees is set in the bung hole, and as soon as all commotion has subsided, set her free as above described.

In every apiary there is usually some particular favourite queen, whether for great size, high colouring, prolificness, or as a breeder of splendidly marked bees, which we are very desirous at all hazards to preserve to breed from, and yet circumstances may force upon us the necessity of installing her at the head of a large colony, and it is with great fear and trepidation we make the attempt, anxious to reduce the risk to the very lowest possible minimum. Such a case I laid before the late Mr. Woodbury, with reference, if I remember, to the only survivor of a little lot of queens he had shared with me from the Como district, which was the breeder of the most beautifully marked bees I ever saw. His reply was to this effect :—First cage the queen to be dethroned in her own hive, for a sufficient time to let it be thoroughly known her majesty was in durance, and where, then raise the lid, insert the finger and crush her to death, the news spreads the queen is dead, and various deputations come to satisfy themselves of the melancholy fact, then, ere royal cells are built, revive their hopes by placing the new queen in the cage along with the remains of her predecessor, and by her continuous movements through it, receives the particular odour of the person of the defunct, and she is then released as already described.

While giving the ready-to hand pipe-cover-cage its due meed of praise, I am at a loss to understand why our furnishers of bee appurtenances, have not, ere this, supplied us with something complete in the way of a queen cage, and would suggest for their consideration the following, for a material. Nothing is cheaper or better than the pipe cover style of wire, but I condemn the circular form ; differ as we may about hives ; bees invariably build their combs three-eighths of an inch apart, which gives us the thickness of the projected cage to suit all hives alike, the breadth same as pipe cover, one and a quarter inch, and as the shallowness of this cage is a great defect, to insure the warmth and consequent safety of the queen by having it further introduced between the comb, say a couple inches deep. It would of course be square cornered, where for strength a stouter wire could be employed, and with the same object in view, the top could be fixed, and of stout zinc, having a little flange, or projection of an eighth part all round to prevent slipping into hive, the bottom a wire door, hinged, and kept close with a little steel spring, from which could be carried up the side and through the top, a stout wire, with a knob on top, this knob on being pressed down would open the bottom door, the central slide cut through the middle, and drawn one and a quarter inch, would admit the cage exactly to rest on the bar on either side. The cage could be raised now and again to ascertain how her majesty got along without setting free a bee, and all that would be required when the time for liberating her was up, was to press down the wire to a certain point, where a check or hook could fix it to top, and keeping the door standing open so that the queen could pass out among her new subjects without as much as raising the cage or disturbing the hive in the smallest. In conclusion I trust some such little contrivance may appear at the coming great Crystal Palace Honey Show, win the prize, become generally adopted, and save the life of many an aspirant to the hive throne.

A RENFREWSHIRE BEE KEEPER.

Queries and Replies.

NOTICE.—*When queries on any subject are nearly synonymous, we only publish that which has required the fullest reply.*

QUERY No. 79.—I have a stock of Ligurians in a leaf hive. They are short of food, and I am feeding them with barley sugar. The leaf hive is in a narrow bee house, which is unfortunately so narrow that when I cover the hive with a sack or carpet, the doors of the bee house will not shut close. As the narrowness of the hive prevents the bees from clustering together, and only allows them to build single combs, I was afraid to leave them out of doors, and have therefore placed the bee house in my hall. I have placed sheets of wadding between the shutters of the hive and the glass, and have placed perforated zinc round the alighting board, so that the bees can come out upon the alighting board, but cannot get beyond it. I have also placed perforated zinc over the hole at the top of the hive for ventilation. Notwithstanding all these precautions the bees come out upon the alighting board, and die at the rate of twelve a day. What can you recommend? Perhaps I had better place them out of doors again in a place as sheltered as possible from the frost, and take away the zinc in front of the hive, thus allowing the bees free egress to the open air. Will you kindly write me a line by post.

S. T. DORSET.

REPLY TO No. 79.—If we understand correctly, the leaf hive is a simple Unicomb Observatory Hive. It is a great mistake to suppose bees will exist in them for any length of time. They may be kept in them during the summer, and in some instances they then increase in strength, but as a rule, they gradually dwindle away through inability to maintain the heat necessary for the recuperation of their numbers. Observation hives are merely intended for temporary use, bees cannot cluster in them, consequently in their endeavour to generate the heat necessary to life, they consume enormous quantities of food, and literally wear themselves out. Bees appear to be unable to cleanse themselves, except while on the wing, consequently if unable, through the coldness of the weather to take the necessary flight, they die through dysenteric distension. Hive makers charge high prices for unicomb observatory hives, but do not usually inform their customers that they are for observation only, nor that the bees in them should be transferred to some other form of hive at the end of summer. They are never profitable, as existence in them is almost impossible during an ordinary winter. They should contain bar frames of a pattern in use in other hives, in the apiary, so as to permit of a change of combs while in use for observation, and of wholesale union with other stocks on the approach of winter. We are sorry to be unable to give you any assistance in the matter, the utmost you can do will simply prolong their declining existence, as unless they are transferable, and are united to another hive, they have little or no chance of surviving. ED.

QUERY No. 80.—From a question in the October number of the bee journal, I first became aware of the possibility of a hive having too much honey in it for wintering. This alarmed me about my Ligurians, as I have not taken any honey from them and have fed them, not to any great extent, as whenever I have put a bottle with syrup over them at night, they always seemed to take but a moderate quantity. Yesterday, therefore, I opened he hive, and found the bees in an apparently healthy condition, hough sluggish, which I suppose they always are at this time of year. The bees seemed to me to be much fewer in number than I had expected. I did not see any unsealed honey, but there was more or less sealed honey in seven of the combs. How, as far as you can judge from this, to what extent should you think they might be fed? and if fed at all, I conjecture barley sugar as described in the last journal, should be used and not syrup. All the centre combs are not straight along the bar frames, so I could not lift them up, but I have succeeded in getting the outside ones all right, and I took one out with a small quantity of sealed honey, to serve as a guide comb for the next swarm I put into a bar frame hive. I thought afterwards that perhaps it would be better to leave it in the hive, and if so I can put it back again. Which do you recommend? I suppose they are warmer for a large amount of comb, and of course it is important for breeding in the spring, but I want above all things to get the bees in my future hives to build straight. As the combs will not lift up in the centre, will it be possible for me to get hold of my Ligurian queen, to Ligurianize my black stock after they swarm. Would it be advisable to fill up the space inside the hive, but outside the two partition boards with hay? I was thinking it might help to keep them warm. Since reading the October number I have filled the flower pot over the feeding hole with hay, should this be removed occasionally to ensure the better escape of the foul gases? Also, do you not think that two holes at the top of those large bar frame hives would be better? If not for feeding, at all events for ventilation. One hole in the centre, straight over the entrance, must cause a draught of air along the two or three combs there placed, whereas with two holes, one on each side of the hive, there would be better ventilation and no draught, as the air from the entrance would have to get round the combs. Do you know of any objection to this, as otherwise I shall try it? I had no idea that the sides of your wooden hive require to have carpet round them for warmth, as I thought they were completely self-protecting against cold as well as wet. I thank you in advance for your answers, which are always all that can be desired. I have just made some barley sugar, and put it in tumblers, but when over the hole it will stop all ventilation, and I shall have to remove it in the morning, when, if finished, the stick will have fallen into the hive, or there will be a quantity of bees still feeding, and a good number will probably attack and sting ones gloves, and so lose their lives. I think we must find some better method.

C.J.

REPLY TO No. 80.—As your hive has seven combs partly filled with honey, we imagine there must be quite sufficient for the bees at least for present use, and if in early spring they are gently stimulated with a few ounces of food every night, they will doubtless do well, and early breeding will ensue. Bees are at this season in a condition of repose, and take but little food, and it is unwise to rouse them into activity. They cannot be in a better condition than yours appear to be in having few open honey cells, yet with plenty of honey for the time being. Having also seven combs there will be plenty of breeding space in the hive, and there will be no occasion to return the comb removed until the spring, and probably not then, but much will depend upon the weather in the winter.

and the breeding capacity of the queen. You will then be able to remove the crooked combs from their frames and straighten and replace them, as they will be tougher and more easily handled than now, and the queen may then be easily found. There is no objection to hay being used outside the partition boards, but it is not necessary. As your hive cover is in strips, the easiest mode of ventilation will be to set the strips about a sixteenth of an inch apart, and cover the whole with one or two thicknesses of carpet, or something of the kind, by which means the noxious vapours may escape without draught. There is no occasion for wrapping the outsides of such hives with anything, they are self-protecting. The wrapping recommended in the Journal was for single sided hives, otherwise unprotected. The sticks in the barley sugar should be thrust quite into it, when they cannot fall out. Separating the strips will prevent the glasses interfering with ventilation. There is no occasion to remove the barley sugar in the morning, as the bees will not be able to consume it with sufficient rapidity to cause them to become over excited. ED.

QUERY No. 81. What may be the cause of honey crystallizing, such honey having been taken from sealed comb by means of an extractor, while honey taken out at the same time and by the same machine from hives of the same class 50 yards distant, is beautiful and smooth. At what temperature will honey keep best from cry tallizing, and if the place should be airy or ventilated. What is the cause that on the surface of some honey after stiffening, there is found about half an inch of liquid honey on the top, that never stiffens, though taken out of sealed combs, neither does it shew signs of fermentation.

J. S. WOOD.

REPLY TO No. 81.—Honey contains two distinct kinds of saccharine matter, one resembling in its properties the sugar of the sugar cane, and the other the sugar of the grape, or glucose. The former is preponderant in the saccharine secretions of some flowers, and as this form of sugar is readily crystallizable, the honey containing it in excess is prone to candy or crystallize. The latter (grape sugar or glucose) merely collects in warty masses, as the water holding it in suspension evaporates. This may be seen in raisins (dried grapes) the water from which having evaporated, the glucose or grape sugar may be found gathered into irregular lumps. Different kinds and qualities of honey may be taken from hives contiguous to each other, indeed dissimilar samples may be taken from any individual hive. We often find honey of various colours and qualities, in the same comb, and of different degrees of thinness (*i.e.*, some are more watery than others), and we believe that these conditions must be relied on to account for the extract from one hive becoming solid, and the other remaining liquid and smooth. Honey is formed of water and sugars, in certain proportions, with a very small addition of essential oil. Warm water will dissolve more of these sugars than cold, hence if honey containing only sufficient water to hold the sugars in solution be lowered in temperature, the excess of sugar will be slowly deposited, or in other words the honey will begin to crystallize, but heating the whole will re-dissolve the crystals, and the honey will be again limpid. The temperature should, therefore, be almost as high as that of a hive, but two other conditions are necessary; first, exclusion of air, or fermentation will probably ensue, and secondly the prevention of evaporation, or the whole will solidify. When honey commences to crystallize, the more readily crystallizable sugar separate first, leaving the uncrystalizable, which give sweetness to the limpid honey. The least crystallizable sugar is also least liable to fermentation. This is a fact, the reason of which is not known. ED.

QUERY No. 82.—At page 373-4 of Langstroth's work on bees it is stated, "Mr. R. Colvin has invented a device for securing the combs not merely straight, but of uniform thickness. It will be tested on a large scale this season, (1860) and the results given to the public. In these instances in which it has been tried it has succeeded admirably." Is anything known of Mr. Colvin's plan, or has anything since been devised to ensure straight combs, beyond the various comb guides and guide combs? If a swarm were put into a new bar frame hive, every alternate frame being covered with paper, would too much heat be lost to allow of comb building going on steadily? Perhaps the experiment has been tried, and the result is well-known. Another point on which I should be very glad of information is, when quilts are used for summer and winter coverings instead of crown boards, how are they arranged so as to admit of feeding?

H. JENNER FUST, JUNR.

REPLY TO No. 82.—We are not aware of any plan for securing straight and even combs, which is claimed as Mr. Colvin's invention, nor do we know of any certain method by which that object may be attained. Where straight combs are already on hand, it is a good plan to place them in hives for the reception of swarms, alternately with empty frames, when the bees will usually fill up the vacancies with other straight combs, after which they may be removed, and those newly-built, made to do duty for them, or they may be placed in other positions in the hive. For instance, if two straight combs be placed second and fourth in a hive, the bees will build Nos. 1, 3, and 6 straight also; the originals Nos. 2 and 4 may then be removed, and the new ones placed in the positions 2, 4, and 6, when the bees will (probably) build again 1, 3, 5, and 7 straight, after which by removing them all one step nearer the centre of the hive, and leaving No. 1 again empty, straight combs throughout the hive may almost be insured. Paper covered frames have been tried, but the bees amuse themselves by tearing the paper to pieces. In our own apiary we are generally successful in obtaining straight combs by underlining the centre of the top bars of the frames with melted wax, which we apply roughly with a brush, and remove the surplus by means of a guage made out of an old table knife.

Quilts are seldom used as summer coverings for bees, except when the honey extractor is used, and supers generally take their places. In winter they are not supposed to be brought into use until feeding is unnecessary, (or over) and in early spring for stimulative feeding they may be turned up and replaced, a sprinkling of syrup being given to the bees in the meantime, almost before the bees have recovered from their first surprise on its removal. ED.

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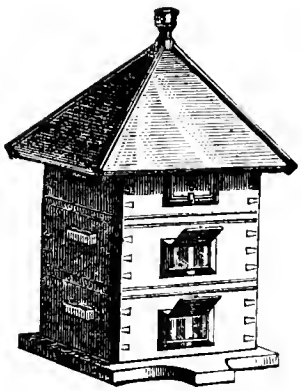

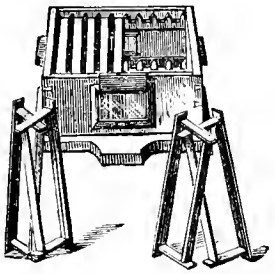

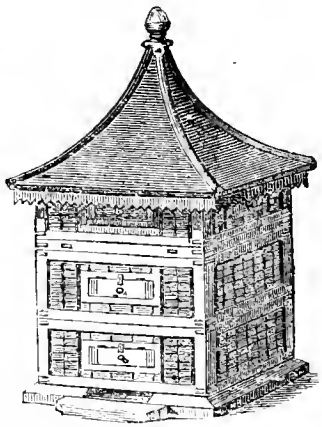

DESIGNED BY MR. C. W. SMITH, OF TOTTERIDGE, HERTS.

COMBINES all the principal advantages of the best bar frame hives known, with those of the far-famed Stewartons.

A hive may consists of one, two, or three stock boxes, and a honey box.

The stock boxes are fifteen inches square, and six inches in depth. The honey box is but four inches deep.

Each stock box is furnished with nine moveable wedge-shaped bar frames, guides, windows front and back, &c.

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The stock boxes can be used separately or together, according to the strength of swarms. Each box will be large enough for an ordinary swarm the first year, the honey box being placed thereon when the stock box is nearly filled.

Carr, or Neighbour, will find that the CARR STEWARTON BOXES form splendid bar frame supers.

A second stock box should be added the next year. Bee keepers who are using other forms of hive, such as the Woodbury,

With this hive stocks and swarms can be united, or artificial swarms made with the greatest ease ; and in summer or winter every stock in the apiary may be properly aided by telescopic expansion or contraction of space, any degree of warmth needful being maintained.

FULL INSTRUCTIONS FOR MANAGEMENT SENT WITH EACH HIVE.

Prices :— Stock Boxes, (wood or straw) 10s. 6d. each, or six for £3 ; Honey Boxes, 8s. ; Crown Boards, 4s. 6d. ; Floor Boards, 3s. ; Pyramidal Roofs, 8s. 6d. and 10s. 6d.

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EARLY VERMONT, EARLY GEM,

VERMONT BEAUTY, COMPTON'S SURPRISE.

Some of the above have produced over 500lb. from 1lb. planted.

PRICE OF SEED, 2S. 6D. PER POUND.

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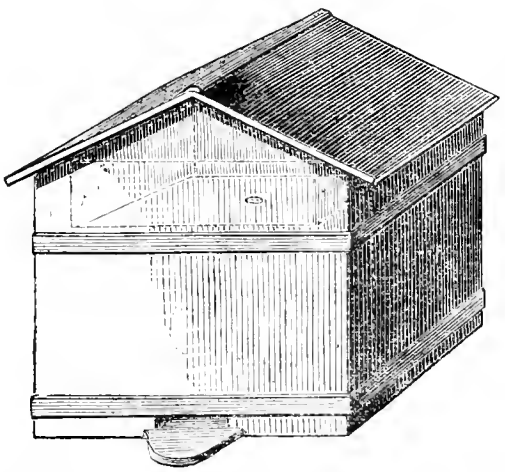
"£70 a Year." How I make it by my Bees. One Shilling. BY the late J. W. PAGDEN ; also by the same author, "Early Artificial Bee Swarming ;" sixpence ; no watching required. —Apply to Mrs. J. W. Pagden, the Chestnuts, Alfriston, Sussex, by whom the same manufacturers of "Economical Bee Furniture" are employed as formerly.

NEW WOODBURY BAR FRAME HIVES, well made, 12s. each. Second hand ditto, good as new; first rate for patterns, 8s. 6d.—Mr. Charles Bond, Fruiterer, Old Brentford, W.

THE COTTAGE WOODBURY.

A complete and perfect Bar Frame Hive. Needs no protection either in summer or winter.



Bee Keepers are informed that now is the time to order hives, so as to insure obtaining them when required in spring.

Orders are now solicited for early *Spring Swarms of Pure Ligurian Bees*, headed by choice queens, just imported and introduced, also for beautiful Ligurian Queens, which can be supplied in May next.

Early orders are particularly requested which will be executed in the order in which they arrive. Swarms, 42s., Queens, 15s,

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THE

British Bee Journal,

AND BEE KEEPER'S ADVISER.

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[ENTERED AT STATIONERS HALL.]

[No. 11. Vol. 1.] MARCH, 1874. [Published Monthly.]

DIRECTIONS TO CORRESPONDENTS & QUERISTS.

1.—Write in a legible hand on one side of the paper only.

2.—Use no abbreviations which are not to appear in print.

3.—Keep every query distinct and separate, and give the fullest possible particulars, stating also the kind of hive used.

4.—When requiring an immediate reply, send a stamped ADDRESSED *envelope, or stamps for cost of telegram.*

The British Bee Journal.

MARCH, 1874.

The proposed Apicultural Exhibition at the Crystal Palace, in the ensuing autumn, is now the great topic amongst bee keepers.

The schedule of prizes to be offered, proposed in our last issue, has, on the whole, met with general approval; but there are some items in its composition which have been the cause of considerable correspondence and discussion. On the one hand, it has been asserted that to bring the affair before the public in its most attractive form, the exhibition of live bees should have the greater prominence and encouragement, and that special arrangements should be made by which they may be shown, working unrestrainedly under perfectly natural conditions, through openings cut in the wood or glass of the Palace walls, which proposal is now under discussion, and we trust will be conceded. We have further proposed that an exhibition of feats of bee-mastery should take place on the verandahs outside the Palace walls, which visitors could view in perfect safety from within, and thus become initiated in the art of bee management, and this, we hope, will be entertained.

On the other side it has been suggested that honey, as the great desideratum in bee keeping, should be considered of the first importance, and that the highest possible encouragement should be given to its production

No one appears to have objected to the classes for hives or bees; but, with miscellaneous classes, Mr. Pettigrew, from "The Paddle Pox," takes exception to the prize offered "for the best essay on the cause and cure of foul brood." He says that "certainly there is *no cure* for it," and further on, that "the *cause* is beyond the ken of mortals," yet suggests that "the prize be offered for the best essay on the *cause* and *prevention*" of that terrible disease. The italics are our own.

We must remind our bee keeping friends, and those of the public who take an interest in the promotion of the science, that the schedule is based on the assumption that a hundred pounds will be contributed to the prize fund, and we have not the slightest doubt that if a general effort is made, that amount at least will be forthcoming. Contributions amounting to £55 have been already given or promised, and a glance at the names on the subscription list, names "familiar in *our* mouths as household words," will better show the wide and deep interest taken in the movement than would many pages of written comment, and will, we feel assured, afford sufficient warranty of its *bona fides*. It has been suggested that manufacturers of hives and bee gear be invited to offer specimens of their wares as prizes in some of the classes, and to strengthen the hands of the judges in their wishes to award extra prizes for specialities of

which they may approve, and we shall be glad to be enabled to second many such offerings. Mr. CARR quotes quotes "in 1765 the Society for the Encouragement of Arts, Manufactures, and Commerce in England offered £400 to encourage bee keeping." We earnestly wish the present Society of Arts would do likewise.

QUEENS AND THEIR PROGENY.

Before the introduction of Ligurian bees into this country, little attention was paid to the breed of bees, and the idea of improving them by crossing, or causing a change of blood by the importation of a stock from a distant apiary at swarming time, seems to have been little thought of or recommended In many rural districts bees have been left to themselves, until they are all relations and their vitality, and ability to propagate their own species, have thereby been so materially interfered with and lowered, as to render them physically unable to fulfil the natural conditions of bee existence, and apiaries containing such are always dwindling, weak, and unprofitable. Since the importation of the Ligurians, the superior qualities of which are acknowledged by all bee keepers who having had any experience with them, considerable attention has been directed to the subject, and "breed" is now recognised as of the first importance in the valuation of stocks, whether for sale, or for ordinary stock taking purposes.

Pure Ligurian bees, on account of their superior, character for industry and gentleness, are much sought after here, and the high prices charged for them through the difficulties and dangers which attend their importation, have induced many bee keepers to devote the main strength of their apiaries to the increase of that special race of bees; and the breeding of Ligurian queens, and the multiplication of stocks has become a business in itself, profitable or otherwise, in the degree in which the native purity of the race is maintained. In all other kinds of live stock, kept for profit, races and even varieties, may be kept distinct, with ordinary care, simply because they may be matched and mated at the will of their owner, but with bees it is a widely different matter. As far as is at present publicly known, there is no method practised by which the fertilization of queen bees can be absolutely controlled. Many of the foremost apiarians in Germany and America, have given this subject their most earnest attention, and although several methods have been devised by which it is possible to increase the chances of queen fertilization by drones selected by the bee master, the matter is as far from human control as ever it was. It may be said that by taking bees of any particular breed into a locality, where no other bees are kept within a radius of twenty miles, purity of race may be guaranteed, but it must be borne in mind that wherever bees can find the means of existence, there is always the chance that wild bees may be found, and therefore the proposition can scarcely be considered a sound one. That a queen bee can only be fertilized naturally when on the wing, is too well-known to be gainsaid, her flight on that occasion being called her wedding trip, and it must be evident that, to secure a successful result, it must be taken at a time when drones are also on the wing, which is usually about the middle of the day.

Under ordinary natural conditions young queens are not brought into existence in a hive, until a good supply of drones has first been produced, and it would seem that a giddy young princess on marriage bent, would have little difficulty in selecting a partner from amongst this host of courtiers surrounding her, and we are sure that every breeder of queens most heartily wishes it were so, as by the introduction of queen cells from selected stocks, to the stocks containing selected drones, the fertilization of the young queens *could* be controlled, but it is not so; nature revolts at the union of blood relations, and the joyous bride, refusing the overtures of all her kith and kin, mates with a noble of her own seeking, from another hive, and returns to her own, fully qualified to govern, and increase the prosperity of her kingdom. Before Ligurian bees were brought into England, little thought or care was bestowed on this subject, beyond barely ascertaining the fact that the young queens were impregnated, and that brood was being raised in their hives, but now, the event is one which causes much anxiety to queen breeders, who not only have a deep interest in the safety of the young queen after her wedding flight, but also in the ultimate result of it, and only such can understand the feeling of disgust which is felt when after the lapse of a month or thereabouts her progeny declare themselves, and become living witnesses that their highborn and beautiful queen mother had "married beneath her." It is poor consolation to the noble Patrician to be assured that his grand children will be stouter and stronger through the mes-alliance of his own offspring with the commoner, he only feels that his blue blood has been tainted, and his ancestry disgraced, and discards the offenders accordingly, and so with the breeder of Li-

gurian queens, he may know (for it is a fact) that the progeny of his ill mated queen will be stronger and altogether better through the mixture of the blood of the two races, but that, although most desirable from one point of view was not the object of his ambition; for which he laboured so long and patiently, and in disgust at his disappointment, he simply pinches her head off.

Many have been the attempts to procure the fertilization of queens by selected drones, but no satisfactory solution of the difficulty has ever been arrived at. It has been remarked that the wedding flight of the queen must necessarily take place when drones are flying, and as it is well-known that drones do not ordinarily venture out of doors after about two o'clock in the day, it was thought that by imposing extraordinary conditions upon them the desired result might be brought about. This idea emanated from one Kohler, a German apiarian of great experience, who thought that by confining the young queen, for a few days, in perfect darkness, at the time when it was reasonable to suppose she would wish to take her flight, and on the day on which she was to be set at liberty, confining also the stock containing the selected drones until the evening when no other drones would be on the wing, that success would be certain, but although it is one of the most likely ways of attaining thereto, it cannot be depended on, from the fact that the queen and drones, though stimulated with a supply of warm honey, cannot be compelled to take their flight simultaneously.

A second plan, more commonly practised, is to keep a stock containing selected drones queenless until late in the autumn, and when the drones of other stocks have been "killed off," and as the bee keeper fondly supposes, there are none but his choice selected drones left alive, to commence queen breeding on a grand scale, with the certainty of success. But alas! During the period of drone slaying by the various stocks in the neighbourhood, the queenless hive, (on the purity of whose drones the bee master is relying,) becomes a city of refuge for the "innocents" of all nations, and ere the queen raising project has well begun, the beautiful and pure Ligurian drones will probably have been reinforced by perhaps ten times their own number of all kinds from other hives, where their lives were in danger of forfeiture.

Another plan is to breed Ligurian drones very early in the spring, and to cause queens to be raised as soon as they shew themselves, but here again "time is out of joint," and much disappointment is occasioned through the loss of queens which are unable to find partners at such unseasonable periods.

In this respect it must be remarked that if the impregnation of young queens be not effected during the first three weeks of their existence, as was demonstrated by Huber, a change takes place in their organism, which renders the act impossible, and consequently they become drone-breeders only, during the remainder of their existence, and it is probable that being thus, as it were, tied for time, may account for the loss of so many young queens during unseasonable weather, the promptings of nature inducing them to leave their hives, perhaps more than once or twice, and the cold wind or rain preventing their return.

The fact that unimpregnated queens are capable of producing eggs which will become perfect living drones, is one of the most astounding in the natural history of the bee. It had long been known that the eggs from which drones were hatched were exactly similar in size and appearance to those which produced worker bees; it was also known (since the discoveries of Huber), that impregnation, once effected did not require renewal, as year by year queens kept in captivity continued to produce eggs which being fertilized, became worker bees, as well as others which we now know were unfertilized, and which produced drones.

This was most puzzling to scientific apiarians and natural historians. It was easy to understand that all the eggs in the ovaries of a queen, might at once be impregnated and rendered fertile, but they could not conceive the way in which the eggs, yet unformed, could possibly be so affected, neither could any good reason be given why the eggs, which were placed in the large cells of a hive, invariably became drone bees, while those placed in the smaller cells almost as invariably became workers, but by constant careful attention and painstaking observation, the key to the problem was found, and the name of Dzierzon, of Carlsmarkt, Germany, became immortal. The ovaries and oviducts of queens had many times been dissected, and subjected to microscopical examination, and their parts were familiarly known, but not so the uses for which they were formed; it was easy to find the eggs in the ovaries, and to trace them along the oviducts to their deposition in the cells, also to watch their development from day to day, until they emerged perfect insects, but to account for their difference as drones and workers, and to establish the theory of their pro duc-

tion, were left to the pastor, Dzierzon, who has discovered beyond the possibility of a doubt, what Von Siebold, the highest authority on parthenogenesis in certain insects, admits to be the true law on the subject and which every bee keeper may prove to demonstration by experiment, if the theory of Dzierzon be correctly understood and acted upon.

(To be continued.)

WHAT TO DO, AND WHEN AND HOW TO DO IT.

The months of March and April are usually the most "trying" in the whole year to the apiarian. It is possible that the early part of March may be bright and genial, and the end of it miserably cold and boisterous. March has the "credit" of "coming in like a lion and going out like a lamb," but in this year of grace, when the seasons seem to have been dancing a new quadrille, and to have lost their places; when foggy November is found disputing with January and February, and King Frost who should be "Master of the ceremonies" is no where, it is evident that directions suitable for ordinary years will in this be completely "out of joint." The early spring flowers are appearing before their usual time, and the mildness of the weather has aroused many of the honey and pollen yielding shrubs into premature life and activity, deluding the bees into the belief that summer is near, and causing them to commence their breeding operations, not only earlier than usual, but also in a greater degree, thus consuming their stores and adding to their number of consumers to an extent which must hereafter leave them in straitened circumstances. Hives at this season of the year, except when very light, must not be judged by their weight alone. Lightness in hives is a fair criterion that they contain little provision, and bee keepers will scarcely require to be told that feeding, to save the bees within them, is absolutely necessary; heaviness is on the other hand often most delusive, and many good stocks are allowed to perish, because they happen to be heavy enough to please the whim of their owner. One fruitful source of disaster is the overabundance of pollen stored during past years, which the bees are unable to consume because of the shortness of their honey supply (see query and reply, No. 3), and which gives delusive weight to the hive. Hives thus overcharged with pollen cannot prosper, unless early stimulative feeding be resorted to, to enable them to consume it in the rearing of brood. This, though a much neglected, is a most important matter, and explains why hives, which in a past year have furnished excellent supers of honey, may in a succeeding one barely maintain their strength in numbers. If a hive thus overcharged be neglected in the spring, the bees will not be able to commence their full breeding operations until they can get fresh supplies from the fields, and as such supplies will consist of pollen as well as honey, which, being new, they will use in preference to that already stored, the latter will be allowed to remain in the cells choking them up, and preventing the deposition of eggs in sufficient numbers to enable the stock to increase sufficiently to yield any surplus whatever, and the hive will remain pollen bound to the end of the chapter, unless frames of empty comb be supplied to them.

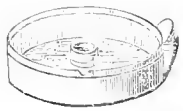
Bees in a state of nature will store fair proportions of both honey and pollen, and whenever they commenced their breeding operations, they would start with a fair balance of both, but when "cultivated," the greater portion of their honey is usually removed in autumn, and thus the balance is destroyed, leaving the colony, though willing to work, incapable of action, and in the condition of a regiment of soldiers, from whose ball cartridges the powder had been abstracted, the pollen and the bullets becoming simply obstructive lumber.

Many bee keepers find that as spring advances, their heaviest and best stocks of bees *suddenly become light*, and are at a loss to account for the strange phenomenon, which, however, seldom occurs to any but stocks which were swarms of the previous year, and from which no surplus honey had been obtained. The solution of the problemn is nevertheless very simple. A hive in January may be of forty pounds weight, and in March may be nearly the same, yet during the interval the bees may have been induced, by the forwardness of the season, to convert a large proportion of their honey and pollen into brood, filling the cells with living organisms which are nearly as heavy as the honey and pollen of which they are composed. At such a time, should the breeding be suspended, either from sudden coldness of the weather, or from impending scarcity of provisions in the hive, the cells would speedily become empty, and the hive light from the hatching of the heavy masses of brood into living bees, which are almost without weight at all. A Woodbury frame of comb, measuring 13 inches by eight, if filled with sealed brood, would weigh about four pounds, and would contain about

five thousand grubs, yet these grubs, when they became bees, would not weigh more than one pound, and as the empty comb and frame would not weigh more than about half a pound, a sudden diminution in the weight of a colony in which breeding had been extensively carried on, may be easily accounted for, for the stores in the hive are not only largely consumed in the development of the brood, but they are also impoverished by the increased population thus produced.

It sometimes happens that colonies, which have been betrayed into excessive breeding, either by unusual mildness in the weather, or by temporary stimulative feeding, finding their prosperity suddenly checked by the neglect of their owner, or by change of temperature, not only discontinue the production of brood, but they set vigorously to work to destroy that already existing in the cells, and thereby effectually prevent an increase in the population, which their instinct teaches them would be ruinous if permitted. This sort of thing occurs most commonly in the month of April after a few weeks of genial weather during which the bees have been able to gather provisions from natural sources, stimulating their breeding propensities to the utmost, and throwing the bee keeper off his guard with respect to the necessity for further feeding, when a few days of wet or cold weather will reduce the most prosperous colonies to the verge of starvation. Such a condition of things should be most carefully watched for and guarded against by immediate recourse to the feeding bottle, that best of all appliances for the purpose.

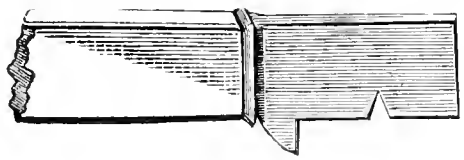
We are quite willing to acknowledge the ingenuity displayed in the invention of float feeders, but we feel bound to caution our readers against the dangers which arise from their use. But first let us describe them. They are made in various materials, wood, zinc, and earthenware, and may be had either round or square, but for the purposes of description that represented in the engraving will be sufficient. It is made to fit on to the top of a hive immediately over the feeding or ventilating hole, in the centre, is a vessel intended to contain syrup or honey, on the top of which a perforated wooden float, *c*, shall lie, to form a platform or raft for the bees to crawl upon, and through the holes in which they imbibe the honey or syrup beneath them. In use, the food is poured into the funnel, *e*, and finds its way under the float, *c.c.*, at *b.b.*, which is thereby raised until it nearly reaches the glass cover, *d*, the bees being supposed to come up through the tube, *a*, and when filled to return to the hive by the same means. In practice, however, this is not always the case, for in cold weather they often stay in the hive and starve, rather than leave their cluster and perish of cold in the feeder, and although this may in some degree be prevented by feeding with warm food, there is always the danger of loss when it becomes cold again. Another disagreeable feature in it, is the difficulty of removing it when bees are in it, when from any cause it may be necessary to do so, and a third objection is that bees must always leave their cluster in the hive to partake of the food offered them.



The chief danger arising from its indiscriminate use consists in its liability to carry infection from one hive to another, as would surely happen, if by any mischance that terrible scourge, "foul brood," found its way into the apiary. Foul brood is highly infectious, and is most easily communicable by infected honey or syrup, the smallest particle of which, fed to any of the larvae, will eventually lead to the destruction of the whole colony, for at present there is no known cure for the abominable disorder, which, like cancer, continually destroys. The introduction of infected honey being the readiest means of communicating the disease, does it not seem as if the float feeder was specially designed for the purpose? If by any possibility the disease has found its way into an apiary, and this feeder is placed upon the infected stock, (and stocks badly affected are always weak, and most liable to such attention,) the warm moist atmosphere of the hive, reeking with the germs of the disease, will ascend through the tube, *a*, and condensing against the glass, *d*, will drop in a liquid form into the syrup, poisoning the whole of it, and saturating the wooden float with its deadly virus, which in its turn will poison the food next poured into the feeder, and sooner or later cause the destruction of any stock of bees to which it may be given. *Verbum sat.*

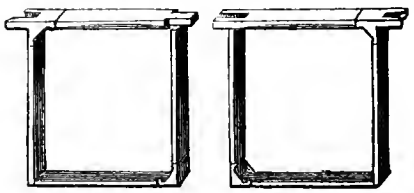
Gentle stimulative feeding may now be safely proceeded with; and in this the bottle will be found superior to all other means at hand. If it be determined to feed on barley sugar, an ounce or two per diem may be given, and if the bottle containing it be inverted over the feeding hole, and the perforated zinc withdrawn, the bees will be able to obtain it

without excitement, and when the bottle is emptied, the zinc may be easily replaced and the bottle removed. Where it is impossible to give the bees daily attention and stimulative feeding is desirable, it will be found an excellent plan to place a large bottle of syrup over the feeding hole, in the manner directed on page 5 of Journal, No. 1, but to prevent its too rapid consumption, a piece of thin tin or zinc, in which only about three small holes have been punched, should be thrust between the neck of the bottle and the perforated zinc, which latter should be allowed to remain, so that the bees may cling to its underside and obtain the limited though continuous supply vouchsafed to them. As the season advances, additional holes may be punched in the piece of tin or zinc so that they may obtain a larger supply daily, and it will be found that this method is far preferable to the usual custom of giving food by "fits and starts," and will not be so likely to cause undue excitement in the hive, or loss of bees through their flying abroad. Now is the time to procure hives, and all other appliances necessary. Those who neglect to do so may find some difficulty when swarming time is near, in obtaining them, as hives are cumbrous things to keep in store, and hive makers do not usually provide many on speculation. In our reply to a query on page 163, we referred to our usual method of forming comb guide on the underside of frame bars, and by particular request we here give the *modus operandi*, the principle of which we forwarded to the *English Mechanic* and *Mirror of Science* in 1871. The guides are made with wax, and are guaged with an old table knife ground and notched as shewn in engraving. The wax is put into a saucepan nearly filled with water, and when melted over a fire, it is used direct, off the top of the water by dipping a small brush into it, and making a thick line of it down the centre of the bar when one stroke of the guage along the side of the bar, pressing also against the waxen ridge, will leave a clear line of wax of a triangular shape, which is rather better than the patent wooden triangular comb guide, about which so much money has been spent in law in America. By using the wax as it floats on the hot water, the brush can be kept clear of cold wax, by pushing it down into the water, and all the heavy dirt will fall to the bottom of the saucepan.



Another great advantage in this method is the prevention of waste of the valuable bees wax, there need be no burning of it, or waste in shreds, as every bit guaged off may be immediately returned to the saucepan, and after the work is over, the cake of wax may be allowed to cool on the surface of the water, with the brush sticking in it ready for future use, when it will simply be necessary to replace it in the saucepan to be remelted.

Queen breeders will be glad to hear of an improved twin bar frame which is specially devised for use in nucleus hives, and is the invention of our scientific



MR. CHESHIRE'S TWIN NUCLEOUS BOXES.

correspondent F. Cheshire, Esq., of Acton. Two of them occupy exactly the same space one Woodbury frame, and by their use, nuclei may be more easily united at the end of the season than under any other system or arrangement, and in the spring they may be as easily reformed. As will be seen from the engraving the projecting ends of the nucleus frame bars lock into each other and allow the side pieces of the frames to come close together. when a small bell hangers staple thrust into them, or a piece of fine wire twisted round them will make them perfectly sound. It is of course necessary that the angles should be firm, hence tin corners are used, patterns for which will be found at pp. 53, or 69.

Correspondence.

EXPERIENCE OF A NOVICE.

To the Editor of the BRITISH BEE JOURNAL

SIR,—Having purchased a swarm of pure Ligurian bees, as described in my letter of January last, and being desirous that all my stocks should be ligurianized, I proceeded to destroy all the black drones in my apiary. My plan was, on a bright day when the drones were out, to place perforated zinc in front of the entrance, through which the working bees only could return into the hive. and then to smash all the drones, which I fondly hoped would be left alone outside, but in practice I found this to be impossible, for

the drones wedged themselves so closely against the zinc, that the whole stock was in danger of perishing from suffocation, and it was therefore necessary to remove the zinc to give the bees any relief. Having been told of Aston's bee traps, and that he was making drone traps out of them I obtained one, but it did not answer, as the drones seemed unwilling to lift the transparent falls, although when one did so he was quite securely caged, so I sent it back, and he sent me another of a different description to try, and on the first day of using it, I caught and destroyed nearly a pint of them, which so pleased me that I purchased two others of the same kind, and by their aid speedily cleared my hives of all the drones that were capable of taking wing.

Once in the cages, which are of the pattern illustrated in the Journal, page 125, it was impossible for them ever to escape, whilst the workers could go and return without interruption. These traps are also useful to protect the hives from robber wasps and flies, which trouble my bees very much in their seasons, so I kept the traps fixed to my hives for ten weeks, and only took them off on the 12th of October last, at which time they were not required.

When I received my Ligurians, I put them into a hive furnished with twelve bars, eight of which were filled with comb, containing sufficient honey to give them a good start, and in three days the queen began to lay, and when the eight combs were filled with eggs and brood, I took from them two of the combs which contained both drone and worker brood in all stages, and having made an artificial swarm out of one of my black stocks, I gave the bees to these combs, and was pleased to find that in a few days they raised four queen cells. I then made two other artificial swarms, to each of which I gave a pure queen cell, leaving two in the hive which raised them, but from some cause or other I lost all four of the queens which hatched from them. I therefore sent for two pure imported queens which duly arrived, and having captured those which were in two of my strongest black stocks, I caged them for two days, but on releasing them I found the bees attacked them and stung them so that they very soon died. On searching over the hives after their death, I found the bees had raised six queen cells in each of the hives. These I immediately cut out, and having replaced the frames, twenty in number, gave them back their original black queens, and so ended my first experience in Ligurianizing.

J. B. WOODCOTE.

Newport, Salop.

NOTE.—We have often pointed out the difficulties which attend the introduction of alien queens, and always recommend that instead of attempting to do so, inexperienced bee keepers should Ligurianize their apiaries by the use of small swarms, as directed on pages 15 and 16 of the May number of the Journal. The method is the cheapest in the long run, and is safer than any other, there being no risk beyond that of losing the young queens on their wedding trips, and that is a risk which must always be abided by, as at present the fertilization of queens is not subject to human control. Our correspondent seems to have been particularly unfortunate with his batch of young queens. Query. Would it not have been as well to have allowed his black drones to live? Even supposing his young queens had mated with them, their drone progeny would be pure in the ensuing season, and would greatly increase his chances of success on a subsequent attempt. ED.

NOTES.

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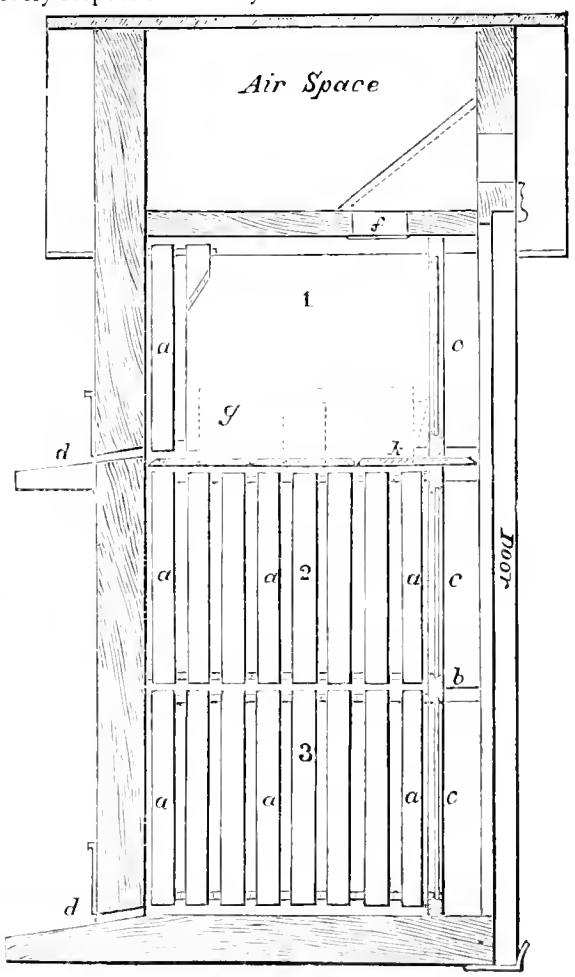
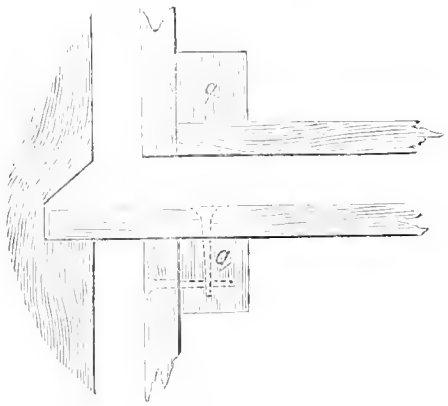
SIR,—There is little doubt that of all the materials used in the construction of hives, wood is the most serviceable and cleanly in every respect, therefore, as a modern hive, and entirely constructed of wood, the annexed drawing is an example, and in a great measure combines all the requisite qualities of a good beehive, it contains available space in the brood room equal to the cubic contents of the stipulated bushel, and hives of the construction shewn have proved in every respect satisfactory.

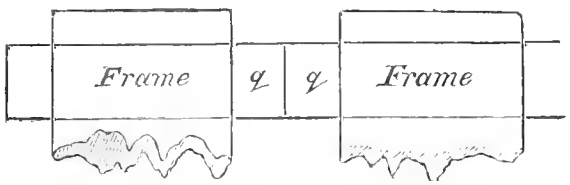


1. The accompanying engraving shews the side elevation of the hive in section.

2 and 3. Part of frames full size, shewing construction, support and maintenance at the requisite distances from each other by the distance pieces *g*.



a. Frames 16 in the brood room and eight for the honey room, size inside 10⅝ by 8⅝, wood used, fifteen-sixteenths by three-sixteenths distance pieces, *g*, 1½ by ⅜ by ⅝, frames planed on edges and outsides.



b. Grooves for ends of frames to slide in.

c. Windows to slide in and out according to the number of frames in brood or honey rooms, covered with drugget in winter.

d. Entrance with diminishing slides.

f. Holes for ventilation, a perforated zinc plate covering the insides.

g. Shews in dotted lines a feeder, as applied in the honey room.

k. Sliding partition board, ¼ inch thick, in three widths, a hole two inches in diameter in the middle one, these separate the brood and honey rooms, a piece of drugget carpet is laid over these in winter, if severe weather, two thicknesses, the edges as seen are bevilled.

1. Honey room space occupied by frames, ¼ inch, under the frames, ⅜ of an inch.

2 and 3. Brood room space, occupied by frames, 18½ by 12 by 11½, space over the frames, ¼ inch, between the top and bottom frames, ½ inch, and under ½ inch.

General remarks.

Outer roof, ½ inch thick, covered with zinc or canvass painted.

Inner roof, one inch thick.

Front, sides, and floor, two inches thick.

Door, 1½ inches thick.

The hive may be made of thinner material, and thatched with straw on all sides. This class of hive is also made with two rooms over each other, or three as shewn also, in some cases four, and by making twice the width shewn, and dividing by a partition it can answer for two or more colonies.

J. S. WOOD.

NOMENCLATURE.

SIR,—A small tenant farmer on Cannock Chase in Staffordshire, a fine heather district very inadequately stocked with bees, informed me last summer that he once knew a man who "got seven hives out of one, in a single season" He had a hive, and they swarmed and they casted, and they spindled and they bunted, and the swarm swarmed, and casted, and the cast swarmed; "anyhow there was seven of 'em." I should like to know whether the "like o' that" ever occured in the experience of yourself or any of your readers; indeed whether such a prolific stock is conceivable. I was rather sceptical of the fact, when it was narrated to me, but know so little of bees, that I could only express the admiration which was evidently expected of me.

My principal object, however, in craving a corner in your Journal is to ask whether "spindle" and "bunt" are known in other localities besides Staffordshire, as names for a third and fourth swarm respectively.

SIC VOS NON VOBIS.

NOTE.—In our own neighbourhood the names given to successive swarms are, swarm, cast, second cast, third ditto, and so on. In the adjoining county of Berkshire a friend informs us that their order is swarm, cast, smart, chick and brood, shewing that sometimes five issues have been expected, or obtained. The "like o' that" recorded above, has never occurred in our experience, the nearest approach being the multiplication of one stock into five, by natural swarming, which were afterwards made into six by artificial means, all of which have filled large bar frame hives and are doing well. This occurred in the apiary of our esteemed correspondent, F. Cheshire, Esq., who will doubtless one day record the wonderful doings of his first Ligurian swarm. Ed.

DRONE BREEDING.

SIR,—I here give you an account of a stock hive, whose queen turned out deficient in her drone laying capacity (?) and we kept her two years to satisfy our-

selves of the value of such a hive. We could find no fault with it till the swarming season when we became aware of a great deficiency of the population of the hive. On examining it to ascertain what was wrong, as we saw only two drones flying about, we found only empty drone cells, and not any weight as we generally find hives are when the drones are in full force at the swarming season. We were greatly disappointed, as we expected a good hive of her, as it was our best in the spring, and although it was an average honey year, it made no more than was sufficient to keep itself. In the year after it was worse still, as it was the month of August before it came to anything like swarming condition, and no surplus honey. This hive was nothing behind its neighbour hives at the beginning of the first season, till the drone and hiving period in May and June, and then it fell far behind them, as there was not any of the great rallies of young bees that we all so much admire, after the drones make their advent, giving us unmistakeable proof that a hive without drones is of no use, and proving also that drones are both honey and heat producers, and that they are worthy of a better fate than they receive at the hands of their owners. Now if we take 1,500 drones as an average number in our hives, this gives us of bees 3,152 to be at liberty to gather honey and other work, which is necessary in a hive, and if we take these drones away as W. M. Bannockburn proposes to do, then we at once take away or destroy the working power of our hives to the amount of 3,152 good working bees, for they must remain inside to keep up the temperature of the hive, and we lose the surplus honey which they gather over that required to supply these 1,500 drones, but if we work his way (W. M). we are in error, and not one whit in advance of our great grandfathers, three hundred years ago. Now, if it be true that it takes 20lbs. of honey to produce 1lb. of wax, this will give us a rough idea of the produce of these 3,152 bees, and if a hive of the average of 22,000 bees will produce 20lbs. of honey in a week, as I find they occasionally do, the produce of these 3,152 must be close on 3lbs. of honey. And now W. M., or any other bee keeper who holds your views, would you sacrifice the produce of these 3,152 bees for all the amount of food it takes to supply these 1,500 drones, which will amount to about 1oz. of honey per week to keep them in luxury?

JOHN ARMSTRONG.

P.S.—The best ventilator that I can get for my hives is to cram them full of bees, which protects the hive against all winter enemies.

EXPERIENCE.—FERTILE WORKERS.

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On Whitsun Monday, 1873, a fine first swarm of hybrid bees were safely hived in a Cottage Woodbury, and did exceedingly well until September last, when having a superabundance of imported Ligurian queens, we endeavoured to depose her Hybrid majesty to make way for one of the purer breed. The hive was then filled with comb and crowded with bees, and was altogether in splendid condition for wintering, but although we searched diligently for her majesty, we could not discover her, and consequently were obliged to postpone the operation. Six weeks after, on again attempting it, we discovered a multitude of drones in the hive, and large quantities of drone brood in all stages. Some few of the drone grubs were in worker cells, but the bulk of the eggs had been deposited in drone cells, some of which contained as many as fifteen, and many others eight and ten each. There was not a trace of a queen cell from which a queen might have hatched, throughout the hive, but there were many queen (?) cells raised on the drone comb, in some of which were dead larvae. It needed no ghost to satisfy us that that abnormal nuisance, a "fertile worker" was present, nor were we unaware of the fact that the stock was in great danger, through her exertions as a drone egg producer, and the fruitless labour and expenditure of stores by the bees consequent thereon, in their efforts to bring them to perfection. At so late a period in the autumn, it would have been folly to have attempted any of the usual means by which hives are rid of these exalted commoners, although we might have tried the fumigating process, described by J. T. Rose, page 144, *American Bee Journal*, Vol. 5, No. 7, but seeing that the bees were aware of the predicament into which their pretended queen had led them, as was testified by their repeated endeavours to raise queens from her drone brood, we determined to introduce a new queen to them, which we did, caging her for three days on a central comb, hoping that her presence would revive the loyalty of the community. That it did so was evident, for on her release she was most joyfully received and caressed by the workers, and for two hours, during which we watched for any symptoms of antagonism, in the hope of being able to capture her antagonist, if one declared itself, and which we felt sure would be the fertile pretender; she was evidently the theme of song, the admired of all admirers, and feeling hopeful that all would be well, we closed the hive, and left her to *her fate*. The weather would not

permit of our re-opening the hive for nearly a week, and when we did so, our beautiful queen was missing, the presence of eggs by the dozen in drone cells testifying only too surely the cause, and assuring us that she had been destroyed by the more nimble fertile worker.

It is not our purpose to follow the fortunes of the stock thus afflicted, but to record and call attention to the facts which seem to overthrow the previously accepted notion that fertile workers are exalted by royal food accidentally dropt into their cells, or fed to them when too far advanced to be capable of perfect transformation, as suggested by our experienced "Lanarkshire" correspondent on page 11 of the Journal for May last.

As at first stated the bees in this hive were a first swarm, they were headed by a queen of the previous year's raising, and up to September last they had never been in the least degree disturbed, and then when we could not discover her majesty, we looked for signs, to account for her absence, and could we have discovered even the suspicion of an old queen cell we should have concluded that her ladyship had stolen away with a swarm, and that her successor had failed to return after her wedding flight. Not a trace of evidence could we find, however, to justify this suspicion and were forced to the conclusion that the queen had accidentally been lost or destroyed during our search for her in September. But whence came the fertile worker? She was not raised in the hive after the loss of the queen, for there was not then a particle of brood in the hive from which to raise her, beside which in six weeks from the loss of the queen, a whole batch of drones had hatched out. It is evident to our mind that she had existence during the life of the queen and lived peacefully in the hive with her, but that, after the death of the latter, she became "exalted," and hence was developed her sanguinary regicidal disposition as a usurper. We may say we have tried to introduce queens on five occasions to this hive, and on each, they have been kindly received by the workers, but have afterwards been slain.

The foregoing was written for publication in the January number of our Journal, but has been withheld from time to time in consequence of the pressure on our space, but after the remarks of Mr. John Hunter page 158, on the artificial fertilization of eggs, we have determined to try our utmost to fertilize the eggs of a fertile worker, with the spermatozoa of her own drone offspring, and if by the experiment we succeed in raising perfect workers, why may it not be possible to raise perfect queens? It may be wild to speculate largely on the subject, but if such effects be *possible*, the fertile worker, after all that has been said against her as "a perfect nuisance" may become an object worthy our most earnest study and attention, as furnishing a means by which in *dire extremity*, a race of bees, by artificial aid may be preserved.

THE EDITOR.

THE STEWARTON HIVE AND SYSTEM.

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In your last issue, your correspondent, Mr. Wm. Carr, while taking leave of the above subject, would fain administer a parting hit at two points, the "shallowness" of the Stewarton hive, and the *nom de plume* of "your anonymous correspondent."

With regard to the first, I have already had occasion to remark, that Mr. Carr was "rash" in entering into this controversy, and I employed the word advisedly. The Stewarton instead of being shallow, is the reverse, a very deep hive, 18 inches of breeding space, far exceeds the depth of most hives in common use, this, like many another controversy, recalls the old story of the two sides of the shield, or the same thing viewed from different stand points. Your correspondent, instead of looking at the hive as a whole, considers merely a sectional portion of it. The same contracted grasp led him into preferring crown boards to slides for such a hive, when any one at all familiar with its manipulation, knows, that before the crown board could be introduced, the sections of the hive would have to be separated, and the bees let out about the bee masters ears, while with the ingenious contrivance which he styles the "Plague of a slide," additional space can be given, bees added, or communication cut off without liberating a single worker; and need I add the thinness of top he too condemned, manifestly facilitates communication between the two divisions, indeed, your able contributor, "A Lanatkshire Bee Keeper" rightly accounted for the want of success complained of in England with this hive, that our southern friends were possibly wise "above what was written."

From your correspondent's sectional view, had he more carefully perused my remarks, he would have observed we are so far agreed that instead of having the separate body boxes but six inches deep, I at the start increased them to seven, (see page 13), and now I employ both seven and nine inch boxes, so as to accommodate the extra prolificness of the hybridized Italians, and with my amateur sympathies, to enable such sections to be employed at a pinch for separate swarms, or "beat-outs."

Mr. Carr reiterates his fear that his criticism "hurt" me, possibly I may have thought the flat contradiction, that I was "mistaken" in both the origin and manipulation of a hive, with which I had been long familiar, savoured a little of rudeness, but this could not hurt me, when I knew it could be so easily demonstrated, there was no mistake about either,

but what did hurt me was that this excellent periodical should, even in one instance, have the semblance of degenerating into a vehicle of puffery, for simultaneously with my reviewers criticism, the advent of a new hive was proclaimed, bearing his name, and to those of us with whom bee keeping is but a pastime and an amusement, and who never had the smallest pecuniary interest in any hive whatever, the taste of the inventor did seem questionable, trying to depreciate a hive so justly celebrated as the "Stewarton" of Kerr's invention, with the seeming intention of elevating the "Carr-Stewarton" and his logic seemed most inexplicable in condemning the 6-inch sections of the original Stewarton, while the hive he appeared to have selected to bear his name to posterity, should be of that identical depth. Now it did afford me much pleasure to find from a private note from our Editor, that I was mistaken in this, that the new hive, as your advertising columns now bear evidence, was designed by Mr. C. W. Smith, to whom alone is due the credit of its invention, and that it was named by him in honour of Mr. Carr, consequently I do heartily apologise to the latter gentleman for any depreciatory remarks of mine in consequence, and I feel certain that when this meets the eye of your correspondent, "A Lanarkshire Bee Keeper," he will reciprocate the like feeling.

In the January number I endeavoured to put your correspondent right, as to the fact that although Geddie in 1675 obtained a patent, and Rusden subsequently sold licences, for the octagon storified hive, still we had it on the authority of Rusden himself, that the new discovery was none of theirs, that, to use his own words, "the transparent hive first showed to us by Dr. Wilkins, late Bishop of Chester," the bishop was consequently, as I said, "the first possessor, whether its inventor or not, must ever, I am afraid, remain an open question."

When writing this sentence, I quite overlooked having some years ago met in *Milton's Practical Bee Keeper* with a most interesting letter, dated Feb. 16th, 1654, by a Fellow of All Soul's College, Oxford, then in his 21st year, who afterwards became the world-renowned architect, Sir Christopher Wren, accompanying which was a particular description of our three storied bee hive. "Last year, as I remember, we put in two swarms, &c." This was May, 1653, or twenty years before Geddie obtained his patent. Milton informs us that the hive is the "original one attributed to Mr. Thorley, who lived at Oxford a century after Wren." Now the Octagon hive of Thorley, is the exact counterpart of what we find illustrated in both Geddie's and Rusden's works, therefore the identical hive, Rusden first saw in the possession of Dr. Wilkins; and consequently the invention of no other than Sir Christopher Wren himself. The strong presumption that the hive the bishop possessed was Wren's invention is materially strengthened by referring to the condensed biography of Wren, in *Illustrious Englishman*, vol. iv., page 375, we find the genius of young Wren early displayed itself. While yet a boy, he invented a sort of orrery and some other mechanical contrivances, which introduced him to the notice of *Bishop Wilkins*, Dr. Willis, and other eminent mathematicians of the day, (italics mine). The Bishop, we thereby see, was one of Wren's early patrons, and the letter alluded to above, from its deferential tone, may have been addressed to him, or at least to one of his patrons, this Milton carelessly omits, as well as to reproduce the description of the hive referred to in the letter by Wren, in this letter he expresses regret "the device not fully answering our own expectation."...Who have tried the like experiment for us, leads to the inference that he had presented each of his patrons with one of the hives to experiment with, hence its coming into the possession of Dr. Wilkins.

The dissatisfaction Wren refers to, arose from the bees "filling almost the passage hole quite up, leaving themselves only a little hole, as big as two fingers, might go in for this passage up and down."

Rusden's subsequent difficulty with the same hive, arose from a different cause, as the unhatched brood in upper box corrupting after removal.

It remained for the ingenious Ayrshire Mechanic, Robert Kerr, to obviate both, in his Stewarton Hive, making the spaces between the several combs moveable at pleasure, by sliding slips of wood, so that the communication between the sectional boxes, could be made as free as if they were but one, and by means of his shallow supers, provided distinct and separate chambers for the honied store, shutting off the queen and breeding department, by keeping the central slides of the upper stock box closed, saving the side ones, for an upward passage to the supers from the outer honey combs, where most the honey gatherers do congregate.

We can all sympathize in the agreeable surprise Milton experienced on purchasing at the sale at Strawberry Hill, a very old book on bees, (name unfortunately not given,) to find that our great architect, Sir Christopher Wren, was a contributor to the subject of bee keeping, and the inventor of a hive long attributed to others.

The distinguished architect of the octagon storified hive, did not design, as Mr. Carr supposed, anything "shallow" or low, his aims were too lofty for that, as my octagon colonies attaining a height of 46 inches, tower over all others in the apiary, much in the same way as that artist's great work, St. Paul's, looks down upon all compeers, and the idea of combining the labor of two swarms to effect his purpose, was quite in keeping with his stupendous work of St. Paul's, being completed in 35 years under one architect, while its great rival of St. Peter's at Rome, occupied 145 years to build, and employed a succession of twelve architects in its progress. We are told by his biographer, that "one of the happiest parts of the invention (St. Paul's) attained by the octangular arrangement of the piers, which is as beautiful as it is novel," may have suggested itself from the original design of his octagon hive.

We, who have long benefited by employing octagon storified colonies, experience in our apiaries the aptness of the sentence, cut upon their first inventors tomb in St. Paul's: "Lector si monumetum requiris? Circumspice?" (Reader, seekest thou his monument? Look around!)

But what am I to say of the remaining point, my "Bee veil?" simply that here too I am quite agreed with your correspondent as to the propriety of nothing

being admitted into these pages of which any one need be ashamed, and may I be permitted to add, whether subscribing his name or *nom de plume*, those of us who employ the latter might be quite as chary of sullying it, as those that use the former, still at the same time, I am at a loss to conceive how employing either, can effect in the smallest degree, an argument *pro.* or *con.*, without dragging in Shakespeare's hackneyed line, "What's in a name?" I must confess Mr. Carr's reiterated reference to this, did tinkle in my ear, something like in legal parlance, "No case, abuse the opposite attorney."

It is now 14 years since the present writer penned his first effusion on bee keeping, for the *Cottage Gardener*, now *Journal of Horticulture*, and arrested his hand, in the act of adhibiting his usual signature by the thought, that having no wish to traffic in either bees or bee hives, his name or initials, would convey no useful information to the reader, and after a look through, concluded that he who was evidently the commodore of the little fleet, displayed the better taste, in adopting the *nom de plume*, "A Devonshire Bee Keeper," which carried with it an idea of the writers whereabouts, for comparison of seasons, &c., this Mr. Woodbury subscribed down to that last touching article he dictated in a recumbent position the week before his death. I resolved to follow in his wake, and hoisted the "distinguishing pennant," a "Renfrewshire Bee Keeper," and after so long sailing under an old flag, which has "braved the battle and the breeze," one gets attached to it, and it becomes as it were so "nailed to the mast," that I must own I would be loth to "strike" it at the bidding of Mr. Carr, even had his small shot really "hurt" me, although I thus cheerfully "dip" it in compliment to his passing allusion.

There is less necessity for the contributor to these columns using anything but his real name, as "Our Editor," by his capital idea of the direct reply, saves as in the case of the departmental writers for other Journals, his being bored by querists writing him direct, he, having the private addresses of all his correspondents, can, in any emergency of doubt and difficulty, appertaining to their several beats, summon their assistance to his aid.

Such of us as were wont to contribute to the bee corner of the *Journal of Horticulture*, have pleasant memories of one intercourse together there, to be sure we had the interminable clatter of the spades of our neighbours, those good fellows, the "blue aprons," then in the dormant season, when we had more leisure to fight our battles over again, there was so much cock crowing over the correct penning of the competition poultry, and caging the songsters aright, that their combined bass and treble about drowned the more melodious hum of our lesser favourites, doubtless inducing "Our Editor" spiritedly to lead off a swarm, and a prime one it was, from Fleet Street, which was safely hived at Hanwell, and if we mistake not, we heard "piping" the other morning for a "second." Some may think with me that the mantle of "A Devonshire Bee Keeper" may prove a misfit on the shoulders of Mr. Pettigrew, with the latter "mounted on the paddle box," the pilotage of the older craft may prove somewhat in danger, through the intricacies of the beautiful, but deceptive reefs of Manchester fed productions.

Mr. Carr may have his own notions of these things, but I do think it much more pleasant to find one self rubbing shoulders with such fellow workers as himself on one side, and "A Lanarkshire Bee Keeper" on the other in the young swarm. I have all along read with much pleasure, and I trust with some profit, everything Mr. Carr has written upon bee keeping, down to his exhibiting experiences, detailed in your last number, which are most graphically told, and highly amusing, had I but dropped my bee veil in sending my obnoxious paper, he would have found himself grappling with an unknown foe.

When next your correspondent makes a raid upon the *Nom de plumists*, he may be able to elucidate some of those delightful little mysteries my pen has never dared to probe; for instance, why does the talented author of *The English Bee Keeper* invariably affix the linked letters "B and W" to all his communications? Did that able bee master "R.S." select at random two adjoining alphabetical letters? Has the genial writer "Upwards and onwards," from something I read compared in size to a child's head, abandoned his bachelor's hobby, finding solace in "Boys" more obedient than the refractory little rascals he used to "holler" after at swarming time, in days gone by? Was "Jonas Jackson," of foul-brood celebrity, a reality or a myth? Does that excellent apiarian Mr. W. Bevan Fox, of Exeter, claim kindred to the late Dr. Bevan? or have we here but a happy apiarian coincidence? although the present writer has never met any of these bee masters unveiled, yet he has pleasurably enjoyed their communications all the same, and yet anticipates the satisfaction of meeting all of them, his dozen fellow county subscribing contributors, and many a fresh recruit, rallying round the unfurled banner, of the *British Bee Journal*, which we have all a common duty to lend a helping hand to, support, and have no fear of "quarrelling" with any of them, unless they should desire to emulate Mr. Carr in first raising the discordant note amid the pleasant hum, being quite an admirer of his text, "Peace on earth, good will to men," although "noblesse oblige," me still to subscribe.

A RENFREWSHIRE BEE KEEPER.

THE NOM DE PLUME.

DEAR SIR,—No one has read with greater pleasure than I have the controversy that has taken place in the columns of our journal upon the Stewarton hive and system, the merits of which have been to ably advocated by your valued, though anonymous, correspondent "A Renfrewshire Beekeeper." All honour to Mr. Carr, that he has not hesitated to enter the lists with so doughty a champion, and plainly give us the opinions that *he* also entertains, for it is from such combats that we who are still learning, derive much knowledge. I am, however, very sorry to see the tone adopted by Mr. Carr in your issue of February, as plainly showing that having failed to make good his argument, he falls back upon the paltry subterfuge of attacking your correspondent for claiming to write

under a *nom de plume*. What difference can it possibly make to the advancement we all desire in apiarian skill and knowledge, whether truths and facts are given us with or without a signature, and if with a signature, whether a fictitious one or not, so long as the truths and the facts are there. We shall no more fail to profit by genuine knowledge freely imparted, even though the writer choose to veil his identity, than we should be to discard error and falsehood even though it were authenticated by the deservedly well known name of "Wm. Carr." Mr. Carr has not been particular in verifying his assertions before giving them to the public, for on page 120 he says "I do not believe in anonymous correspondents, as nothing ought to be admitted into our Journal that anyone need be ashamed of." (He may rest assured that "A Renfrewshire Beekeeper" has nothing to be ashamed of in any communication he has contributed to these columns.) "It is a rule that has answered well with the *American Bee Journal* to publish their names and addresses, and it has made that journal what it is."

Now, I do not hesitate to say that no one has assisted so much in making "*that journal what it is*" as their anonymous correspondent "Novice." Mr. Carr being a subscriber and sometime a contributor to the *American Bee Journal* cannot have been in doubt as to the admission into its columns of anonymous correspondence, or he has purposely shut his eyes to the letters in that journal signed X.Y., B., Scientific, Greenhorn, Argus, T.S., Indiana, Seseaye, Sim Plicity, Phonograph, and a list of others. Let us have controversy by all means, but when we *do* lose our temper let us refrain from giving vent to our spleen in the columns of the *British Bee Journal* or we shall *make that journal what it ought not to be*.

R. SYMINGTON.

The Cottage, Oxendon, Market Harborough.

HIVES AND THEIR HISTORY.

Bees have been studied and their produce made available for the benefit of the human race from time immemorial, but the earliest record we have of the place they used for storing their honey is in Deuteronomy, 32nd chapter, 13th verse, "And he made him to suck honey out of the rock." These holes or caves in rocks were the ordinary hives used by bees at that time, but the next account we have where bees stored honey, is the most remarkable hive ever used by bees, and it is recorded in Judges, 14th chapter, 8th verse, "And, behold, *there was* a swarm of bees and honey in the carcase of a Lion," We must not represent to ourselves, such a clean insect as the bee taking possession of a corrupt and putrid carcase, in which to store its honey, for it is expressly stated that "after a time" (Sampson had slain the Lion) he returned and saw the bees and the honey in the carcase of the lion. It is well-known that in those countries, at certain seasons of the year, the heat will in the course of twenty four hours, so completely dry up the moisture of the dead camels, that without undergoing decomposition, their bodies will long remain like mummies, unaltered and entirely free from offensive odour.

Thus the lion's body formed a good hive for a swarm of bees, and there were also the ribs of the lion for the bees to build their combs upon, and I have no doubt they built them straight (although they were not waxed), as Samson so easily "took thereof in his hands, and went on eating." The ribs of the lion was the first account we have of a bar frame.

It is said Mellissus, king of Crete, was the first who invented and taught the use of bee hives. But there was little progress made by any of the following writers, viz., Thomas Hyll, 1574, Dr. Charles Butler, 1609, the father of English apiarians, he was the first to describe the storifying principle, Samuel Purchas, 1657, John Geddie, 1675, who had a patent granted to him for his hive in that year by King Charles 2nd, (the only patent ever taken out in England for a bee hive.) What a contrast this is to America, where they have 101 patent bee hives.

Moses Rusden in 1679 improved Geddie's hive, and put a frame in it for the bees to fasten their combs upon. This is the first account we have of a frame being put inside a bee hive.

In 1712 Miraldi, a mathematician of Nice, first invented a glass hive, in which the indoor proceedings of the bees could be seen, and his description of the manners, genius, and labours of the bees, which were published in the memoirs of the Royal Academy, of Sciences in 1712, gave a wonderful stimulent to the study of bees, Miraldi was succeeded by Buffon and Reaumer in 1728, Swammerdam, 1738, Kœnig, 1739, Rev. John Thorley, 1744, Bonnett, 1745, Gelieu, 1746, and the Rev. Stephen White, 1756, who invented the collateral system.

In 1765 the society for the encouragement of arts, manufactures and commerce, in England, offered four hundred pounds to encourage bee keeping. A premium of five pounds was given to every person, who had in his possession on February 1st, 1766, being his own property, any number of stocks of living bees, in hives or boxes, not less than thirty, and also a premium of five pounds to every person who shall take ten pounds of merchantable wax, from any number of stocks of living bees, in hives or boxes, who shall preserve their lives till the 1st of March, 1767.

This gave such a great impulse to bee keeping, that

I have a list with the names of the authors of no less than forty two works written on bees during the next six years, amongst whom was the celebrated Thomas Wildman, 1768; who performed numbers of wonderful feats with bees, that have never been equalled in any country up to the present time. For instance, when he appeared before George 3rd, standing upright on horseback, with a swarm of bees suspended in garlands from his chin, like a great beard, and after transferring them from his chin and breast, to his hand, stretched out to full length, and then on firing a pistol, the bees all swarmed in the air, and went back to their hive, with numbers of other equally wonderful performances, which were at that time considered feats of ledgerdemain or witchcraft, but the secret of Wildman's skilful manipulation is well understood now. It consisted in a careful holding and disposal of the queen, together with confidence in the general inoffensive disposition of bees. Dr. Evans thus speaks of Wildman's feats :

" Such was the spell which, round a Wildman's arm,
Twined in dark wreaths, the fascinating swarm ;
Bright o'er his breast the glittering legions led,
Or with a living garland bound his head.
His dextrous hand, with firm, yet hurtless hold,
Could seize the chief, known by her scales of gold ;
Prune, 'mid the wondering train, her filmy wing,
Or o'er her folds the silken fetter fling."

We pass by all the numerous writers, each trying to improve the bee hive until we come to John Keys in 1780, when he greatly improved the bee hive, making the back end all of glass, and putting bars in, on which bees built their combs, three boxes all the same size, formed a set, and were used on the storifying principle. My father was a disciple of Keys, and improved his boxes, and I have now a stock of Ligurian bees in one of these boxes that he had made in 1806, and it is as sound and good as on the day it was made. Dr. Edward Bevan, in 1827, improved Key's hive, by making each bar separate, so that any one comb could be taken out without disturbing one of the others.

In 1790 Abbe Della Rocca gave an illustration of moveable bars with wings or pieces on the ends, for keeping the bars at proper distances from one another. Francois Huber of Geneva, Switzerland, was the first inventor of a bar frame hive, about 1796, but his frames were one inch thick, and formed the top, back, and front of the hive, and the frames opened like the leaves of a book.

The late Major W. Augustus Munn was the first one to put bar frames inside a box or case, the same as the modern bar frame hives. He invented the bar frame in 1834, and after testing it for nine years, he took out a patent for it in Paris in 1843. He could not take out a patent for it in England, because, before he applied for a patent, the hive had been described and illustrated in the *Gardener's Chronicle* for 1843, page 317. Major Munn describes his hive in a pamphlet in 1844, and in a second edition of it in 1851, and in that year exhibited his bar frame hives, &c., at the Great International Exhibition in London.

Prokopovitsch, the Russian, described his bar frame hive in a pamphlet in 1841, but he then used bar frames in the supers only. M. De Beauvoys in 1847 and 1871, in his work on bee culture, published in Paris, (three years after Major Munn took out his patent,) describes moveable frames containing all the features of the frames, as invented by Major Munn.

Baron Von Berlepsch and the Rev. John Dzierzon invented the German bar frame hive, a description of which appeared in the supplement to the *Bienenzeitung* of May 1st, 1852. It was called "Stehnder Rahnenliifter" (upright frame ventilator), and the baron states he made and put bees in a hive with frames instead of bars, in June, 1843. In 1850 he put projections on the ends of his bars, to keep them the right distance from one another.

The first printed description of a moveable comb hive in America, was given in the *Scientific American* of March 6th, 1847, page 187. The inventor was Jacob Shaw, residing in Hinckly, Medina County, Ohio.

Rev. L. L. Langstroth took out his first patent on October 5th, 1852, and he made such great improvements in the bar frame hive, that it quite revolutionised bee keeping, and brought it to such great perfection, that it has now become of national importance. The one hundred and one patent bar frame hives in America; Tegetmeir's, Woodbury's, and Carr's improved bar frame hives in England, are all combinations of the celebrated Langstroth's bar frame hive.

WILLIAM CARR.

Newton Heath, near Manchester.

LOSS OF WEIGHT PER STOCK OF BEES IN JANUARY.

—o—

I have weighed all my stocks of bees the last day in every month in the year for a long time, so I always know, without any guess work what they are doing, and the exact amount of food in the hives, and these tables are very interesting.

January, 1874, was a very mild month, and my bees were flying out of the hives on ten days. Although they were so very active, I was astonished on weighing them to find that they had lost less weight this January than in any January since 1866, the average daily consumption of food per stock was only 0·866 of an ounce. Underneath is a table of the average monthly and daily consumption per stock for about twenty of my hives during January for the last ten years.

	Average monthly loss per Stock Ounces	Average daily loss per stock Ounces	Average daily loss in any hive. Highest Ounces	Lowest Ounces
January, 1874	26·83	0·866	1·16	0·71
January, 1873	27·23	0·871	1·30	0·48
January, 1872	31·46	1·015	1·39	0·87
January, 1871	34·88	1·125	1·51	0·75
January, 1870	36·34	1·169	1·64	0·95
January, 1869	28·90	0·932	1·29	0·66
January, 1868	33·75	1·089	1·51	0·79
January, 1867	32·18	1·038	1·55	0·65
January, 1866	23·30	0·751	1·06	0·65
January, 1865	29·55	0·953	1·26	0·61
Total 10 Years	304·33	9·816	13·67	7·12
Average per Jan.	30·433	0·9816	1·367	0.782

WILLIAM CARR,

Newton Heath, near Manchester.

MR. WYATT'S NEW V HIVE.

On page 159 appears an engraving of the V hive and a summary of the advantages claimed for it, together with a promise that it should be further described. The engraving is however so explanatory of itself, that any hive-maker will see at a glance how the hive is constructed, and we therefore feel that it will be unnecessary to give all the minutæ of detail with which we have been favoured by its inventor. It is formed in two parts, the lower part of the shape of a V, forming the stock hive, and the upper part the super cover and roof. The roof *c* is of inch board covered with No. 10 zinc which overhangs exactly an inch all round to keep everything dry. In the centre of the top of the cover an opening is made, covered with perforated zinc, and protected with an outer zinc cover to keep out the rain. Rings are let into the roof near the ends of the ridge to hold the rope or chain which runs over the pullies as shown, and to which weights are attached to counterbalance the super cover, and to permit it to be easily raised or lowered. The gable ends of the super cover measure 21¼ inches from apex to base, and the sides are 21¼ inches long and 8¼ inches high, the wood-roof overhanging one inch, each slope of which measures 17 inches long. The inventor says, "the whole super cover when complete looks as much like a dog-kennel as possible, with two rings on ridge of roof three inches from either end and a raised ventilator in the centre of roof."

The back and front of the hive are alike, except that in the front which in the engraving is turned away, there is an alighting board, and an entrance 7 inches long by 3/8th of an inch high. The front and back both measure 24½ inches from top to bottom and 20¼ inches barely from end to end. They have each a window in the centre 12¼ inches high and 9 inches broad, double glazed, and protected by a door hung at the bottom by cross garnet hinges, and which is closed upwards, and fastened by buttons at the top.

From the centre of the top of the back window is suspended an ivory thermometer, between the inner and outer glasses, we presume to register the heat of the hive, but being in the dead air which is such an excellent non conductor, we fear it will not act correctly.

The way in which this hive is fixed is as follows:—Two posts are let into the ground three feet deep, standing 18 inches above the ground level, the tops are cut perfectly flat, and upon the top of each post is screwed an iron plate 4½ inches square, with a six feet ½ inch rod of iron rivetted to the centre of the plate. On these two upright iron rods, the hive is let down, the two rods passing through the two bolt sockets and lifting handles at either end of line. The lid is then placed upon the hive, and screwed or not (for it cannot move) with four large brass screws, one about two inches from each corner. The super cover is then let down upon the rods, through bolt sockets and handles in the same manner as hive, on the lid on crown board of hive, its lower edges fitting into 1 by ½ inch rabbets on top of hive cover before described. Two small brass pulleys are then screwed into tops of the iron rods marked *b* and some copper sash line passed over each pulley, one end of each sash line being secured to the rings on top of super cover and the other end to a 12½ sash weight. There is a hole tapped in top end of iron rod at *b* to fit the screw of pulley also marked *b*. There is a zinc cone soldered on to the zinc strap that passes over pulley to keep the sash line dry.

The hive itself appears to be most substantially made, and except that zinc is used, where iron or brass would have been better, everything is made of the best and most enduring material, and evidently no expense has been spared in its construction as may be inferred when it is understood that the cost for materials alone was just over three guineas. There is little doubt but that the principle of the hive may be carried out at a much smaller expense, and that it may be made portable. For instance, instead of posts fixed to the earth, legs screwed to the back and front and crossing at the bottom of the V would form steady supports, and instead of the rods and counter weights the super cover might be hinged so as to make the supers accessible with but little trouble. Our correspondent does not say how he proposes to get a swarm of bees into the hive. ED.

(To be continued.)

Queries and Replies.

QUERY No. 83.—Will you kindly assist me with advice under the following circumstances: I have a stock in a straw skep in my sitting room, working through the window. Early last season I placed on it an octagon super (Neighbour's), into which they worked well. When it was full of comb, I placed another under it, and this was about half full of comb when I left home early in July. The bottom super was separated from the hive by an adapting board with three-eighths of an inch slits, the two supers by nothing but the bars at the top of the under one, the top having been removed. I wished to show the top super at a Horticultural Show at the end of July, and the man who removed it and who I thought understood bees, (which very few do in these parts,) showed it with the combs half full of brood,

and what's more the super gained a prize. Imagine my disgust on returning to find a super half full of dead grubs! There was a great draught through the stock hive, which I suppose drove the queen upwards. Would this alone account for the catastrophe of her breeding in the super? When I got back home in the middle of September, I removed the only remaining super, but finding that this too was partially filled with grubs I replaced it after cleaning out the drones which had been bred in it and died, not being able to get back through the narrow slits into the hive below. At this date the stock hive was very light, so I determined to leave on the super for winter provision. Of course the bees are well provided, and seem strong and healthy. On a warm day they come out in great numbers, but what am I do against next spring? I should like, if possible, to get the bees down into the stock hive. How is this to be done? Shall I leave the super on as long as possible, then choose a fine day for removing it, and place it near the entrance of the hive, will the bees then leave it? And how in this case am I to ensure against the queen beginning breeding operations in the super instead of the hive? I have a large under hive made, and successfully used by a country amateur. What would be the effect of placing this beneath the stock hive? Would the queen be less likely to ascend to breed? Or again, could I remove the super now, and feed from the top with the comb in it or with syrup? In this case how am I to drive the bees down. There is a circular opening closed with a glass plate at the top of the super. Would a little tobacco smoke sent through this have the desired effect?

An incident happened to me last summer parallel to which I should be glad to know of. My servants told me one day that while I was out in the afternoon one of my hives had swarmed, but having settled on a nettle, which broke with their weight, had gone back in the hive. I did not trouble about them, thinking they would probably come out again next day. Just a week after I was told that a swarm from one of the hives had settled in the hedge near them. Proceeding to take it I was surprised to find a mere handful of bees, and a closer inspection I found that they were clustered round a piece of comb about half the size of my hand, which was built among the twigs. I hived the swarm, which was evidently part of that which had left the hive the previous week, and the next day united them to a cast, naturally a strong one from the same hive. Is such an occurrence a common one? The week during which the bees were, as I conjecture, in the hedge was fine, but not very hot; no rain fell. I enclose 10s. 6d. for your Journal for this year, and I hope the perusal of it will do something to enlighten my ignorance, and assist my inexperience. J. F.

REPLY TO NO. 83.—The fact of a super containing a large proportion of dead larvae obtaining a prize at a honey show is somewhat significant. There are generally eyes enough at such places to detect imperfections, and tongues sufficient to make them known. Where bees are kept in dwelling houses there will always be a draught through a hive which is not hermetically sealed, unless it is permitted to escape into the room through perforated zinc (or other material), between the wall of the house and the front of the hive. In the first case the bees will be sure to suffer, and in the second it is bad for the occupants of the room.

It is very probable that the draught was in some degree the cause of the breeding in the super, but the main cause was the tertility of the queen, for whose powers the straw skep is apparently too small. It is evident that breeding first began in the stock hive, or there would have been no necessity for a super at all, indeed without the bees had largely increased there, no comb would have been built in the latter. The fact of the queen passing the slits in the adapting board, and breeding drones, which were imprisoned by it, clearly shews the utility of the arrangement. If you leave the second super on much longer, breeding will commence in it, and on removal the first batch of brood (the most valuable too) will be lost. If you remove it with the queen in it, the bees will never quite desert her, although many will return to the hive, and her absence at this time of the year would probably ruin the stock; the better plan will be to gradually fill the super with smoke, so as to drive the queen down with as many bees as possible, and then clear it of the few remaining bees by fumigation with puff-ball. It may be removed at any time by the insertion of two plates of zinc between it and the hive, one of which would be carried away with it, and the other left on temporarily, while the stupefied bees are collected in a glass and revived, after which they may be placed over the feeding hole in a bottle, when they will gradually descend.

There are cases on record of bees building comb in the branches of trees, but it is very unusual for them to do so, and except as an object of interest such a colony is of little value, as it could not exist during an ordinary winter. ED.

QUERY NO. 84,—Do you think it would be a good plan to make the sides of hives double, leaving a space of half an inch between outer and inner box to be well packed with felt, such as is used by engineers for padding steam boilers. A narrow fillet along top and bottom would retain the felt and serve by means of a few screw nails, to connect outer and inner box. The felt is a good non-conductor, and would prevent the escape of the heat through the sides of the hive, and keep the rays of a hot sun from penetrating and loosening the combs, where there is no outside cover. I understand that the cells built by the Ligurian bee are larger than those of the black bee, which seems strange, seeing that the Ligurian is the smaller. If this is so may we not conclude that it is necessary for the perfect development of the insect, consequently the common mode of Italianizing a black stock, depriving it of its queen, and giving an Italian instead, is bad and may in course of time cause the Italian progeny to degenerate. Early in the spring of 1872, I procured a stock hive of black bees for a friend. On examination I found it contained a considerable number of Italians. It swarmed in August, and the Ligurians appeared to have gone with the swarm, as none were observed in the parent hive after. It gave no swarm in 1873, but at the end of the season they, the Ligurians, still shewed in seemingly undiminished numbers. Mr. A. Campbell, my co-reader, the only person who has Ligurians in this locality, has also seen them, and so far as we can judge, they are well marked Italian bees, but supposing we are mistaken in this, and that the black queen had mated with an Italian drone, would not the black bees ere October, 1873, have died out and been replaced by the Hybrid? Or should it be that the Ligurians are pure, and had gone from Mr. Campbell's stock, about three quarters of a mile distant, and joined the black stock, would they not have become extinct by the same date? Can it be that the Ligurian is longer lived than the black bee? How would you explain? If you think any of the suggestions useful, and can give me any explanation of the mixed stock, kindly insert, with your reply in the Journal and oblige.

JOHN PETERS.

Gourock.

REPLY TO NO. 84.—The double walls of hives require only dead air space between them. Having nailed the fillets round the top and bottom of your hive, nail other boards of say three quarters of an inch in thickness outside them, taking care to seal up the space between, to prevent the circulation of the air enclosed by them. Dead air is the best non-conductor known, and is undoubtedly the best for hive protection, as it is cheaply obtained, and affords no harbour for insects.

The Cottage Woodbury hive, advertised in this Journal, is built with dead air space all round it. It was designed by us five years ago, and has during the time which has elapsed since then, proved itself one of the best hives of the Woodbury pattern, needing no protection under any circumstances, during either winter colds or summer heats.

It is a mistake to suppose that the cells built by Italian bees are larger than those built by the English blacks, as has been carefully ascertained by Dzierzon, the Great German naturalist and bee master, therefore the argument in that respect is groundless.

The stock hive of "black bees," which you procured in 1872, appear to have been "hybrids," or it could not naturally have possessed a considerable number of Italian (?) bees amongst its population. It is evident that the queen at the head of it, although a black one, had mated with an Italian drone, and hence the *marked* bees, which, although wearing the uniform of the Ligurians, were, like their co-workers, simply hybrids. A very great mistake is often made regarding these so-called hybrid bees. It is supposed by many that the progeny of a yellow queen, which has mated with a black drone, and of a black queen which has mated with a yellow drone, will all bear distinctive marks of hybridization, but it is not so. A hybrid stock will contain some bees of the purest Ligurian type, but others may be of the most unmistakeable black, and there may be many hundreds (or thousands) of an intermediate character, either slightly tinged, or handsomely decorated by the golden blood of the Ligurians.

It appears that in August of 1872, the hybridized black queen, led off a swarm, and consequently the young queen afterwards raised in the hive was already a hybrid, and being in the vicinity of pure Ligurian drones, it is easy to account for the appearance of the well-marked Ligurians at the end of 1873. Supposing you, immediately on the exodus of the swarm of 1872, had safely introduced a young queen of the purest Ligurian breed to the parent hive, and she had mated with a black drone, her worker progeny would all be hybrids, but many of them would be as black as their drone father, while others would partake of the colour and beauty of their queen mother. It is with bees as with birds and other animals, crossing the breed does not produce an evenness of colour in the progeny, although it ensures an admixture of blood, and consequent increase of power and vitality. It may be taken for granted that if a Ligurian queen, purely impregnated, had by any chance obtained entrance to the hive after the swarm left it in 1872, there would not be a black bee left in it in August, 1873, nor a hybrid, unless she had departed with a swarm at an earlier date, and her successor had mated with a black drone. ED.

QUERY No. 85.—Can you or any of your contributors tell me why honey was forbidden to be burnt in sacrifice to the Lord? Lev. ii., 11th.

Shepton Mallet. O. B. T.

REPLY TO No. 85.—The key to the explanation of why honey is forbidden in Lev. ii., v. 11, is to be found in the fact of its being there coupled with *leaven*. The use of leaven was strictly forbidden in all offerings made to the Lord by fire, as in the case of the meat offering, spoken about in the verse in question. In other instances, where the sacrifice was to be consumed by the priests, and not on the altar, leaven might be used, (see Lev. vii., 13.) Various ideas were associated with the prohibition of leaven, the most prominent one is connected with the *corruption*, which leaven had itself had undergone, and which is communicated to bread in the process of fermentation. This association of ideas was not peculiar to the Jews; it was familiar to the Romans, who forbade the priest of Jupiter to touch flour mixed with leaven, and who occasionally used the word for leaven *(fermentatum)*, to mean corruption. Now honey was used in ancient times to produce fermentation in the preparation of vinegar, and there is reason to believe that the same use was made of it by the Hebrews. The prohibition of honey accordingly was probably due to the fact that the same idea, viz., that of corruption was associated with it, as with leaven.

It has been thought by some that bees were regarded as unclean by the Jews, but the suggestion is of doubtful authority. It may be remarked that various articles passed under the Hebrew term for honey.

1st.—The product of the bee.

2nd.—A decoction of the juice of the grape, a confection well known to the Greeks and Romans, and now well known and largely used in the East, where it is called "dibs." It has the appearance of coarse honey

3.—An exudation of certain trees and shrubs.

4.—A confection from the juice of the date.

By some it has been suggested that the honey prohibited in Lev. ii., 11th., was the "dibs" or grape honey mentioned above.

Old Adam Clarke has a curious explanation: "Because it was apt to produce *acidity* when wrought up with flour paste: or rather because it was apt to gripe and prove purgative. This effect, which it has in most constitutions, was a sufficient reason why it should be prohibited here, as a principal part of all these offerings was used by the priests as a part of their ordinary diet, and these offerings being those of the poorer sort were in greater abundance than most others."

It will be probably a sufficient refutation of this idea, to quote the fact that honey formed no inconsiderable item of diet in Palestine, and though to some persons, honey acts almost as a purgative poison, the constitutions of these persons must be singularly abnormal.

It must be remembered that in all the Jewish sacrifices there was an aiming at absolute perfection in the things offered, and therefore it is most probable that the idea of *corruption* was the right one.

J. J. M.

Hanwell.

QUERY No. 86.—In No. 1 of the *British Bee Journal* a "Renfrewshire Bee Keeper" speaks of the Stewarton system of stocking hives with double swarms, the second swarm being added about eight or ten days after the first. Like your correspondent "Novice" I have a great desire to try this system in my own hives, but I have misgivings on the the subject which he does not seem to be troubled. How am I to prevent the bees of the first swarm falling upon the intruders of the second swarm, and killing them off wholesale? If a pitched battle be the result of the forced union, I fear that our hives will be rather weakened than strengthened by the operation. If your space and time permit, I shall be thankful for a suggestion as to the right way to unite the swarms peaceably.

JOHN R. CRIDLAND.

Copenhagen.

REPLY TO No. 86.—The measures we usually adopt and recommend in the union of two stocks, are first to remove all the combs from both, and having sprinkled all the bees with some scented syrup, to pour both lots together into a clean skep or other ves-

sel, and with a gentle sifting motion, or with a light wooden spatula, mix them together, and when thoroughly incorporated return them to either one or both sets of comb as may be arranged. In uniting a new swarm to one ten days old, great care will be necessary in the removal of the combs from the hive of the latter on account of their extreme tenderness, but with care it may be done. Swarms often unite voluntarily when they issue about the same hour, and sometimes they will unite with other stocks, in which latter case, they usually cluster about the entrance some time before attempting to enter the hive of their adoption, and then as by the method advised by a Renfrewshire bee keeper, they gradually unite with and become absorbed into the selected stock. If they attempted to enter at once, they would probably be treated as robbers, and a scene of slaughter such as you seem to dread, would be the result, but by presenting themselves more in the character of supplicants for shelter, they are usually admitted. A "Renfrewshire bee keeper," than whom no greater authority on the subject exists, is not likely to have given directions on a matter of almost every day occurrence in his neighbourhood during the summer months, that are impracticable. You may safely follow his plan or ours, and in either case if you perceive the least inclination to hostilities, give the bees a dose of tobacco smoke, which will quickly cause the combatants to think more of themselves and their own safety, than of fighting with each other, and during the turmoil that will ensue, the whole will have acquired the same odour, and excepting one of the queens, which will be killed, they will remain peaceably together. ED.

QUERY No. 84.—As soon as I ascertained that one of my hives only weighed about 17lbs. I set to work to see how I could strengthen my hives by feeding. I consulted *Bee Keeping for the Many*, on the different modes of feeding, and as Mr. Pettigrew, in an article on feeding of bees in the *Journal of Horticulture*, advocated the circular feeding pan, in preference to the bottle or tumbler system, I had some circular feeding pans of zinc, made according to the most improved plan in *Bee Keeping for the Many*, and to make the thing more efficient, I adopted the very latest improvements suggested I put the pan on the top of my hives for the first two or three days. All went well, and they consumed some six or eight pounds of syrup, water and sugar, two pounds to a pint. For the last few days, however, the syrup did not seem to shrink as it had done heretofore, so I took the pan off this morning. Much to my dismay, I discovered when I looked at the mahogany float, which is pierced with holes burnt through with a large knitting needle, that there were a large quantity of bees, one cluster in particular, all dead. Can you account for this?

E. W. S.

Bishop's Stortford.

REPLY TO No. 87.—We always use and recommend the bottle feeder, not because we have anything of the kind to sell, but because it is the safest and most cleanly, and because the bees cannot get into it and get chilled to death or drowned. When bees get benumbed gradually, as they often do in the top feeders used, they creep together in little knots, and thus endeavour to protect themselves, but in this case, being so far from their main cluster, and comparatively few in number, they were evidently unable to generate the heat necessary for their mutual protection, and not being able to get back into the hive, they perished. ED.

QUERY No. 88.—From a fault in the covering of an old straw skep the rain has entered the hive; the comb is consequently very dark and rather mouldy; there seems to be plenty of bees. Would it be better to transfer them to a frame hive? They seem dreadfully fierce and put out, and attacked me several times to-day when looking at them. (2). Where can I procure the American zinc ends for frames, of which there were engravings in your paper some time since. (3). I hope you will supply portfolios for your papers, so that subscribers may keep a few back numbers for reference on the table without danger of injury. If you will, when may we get them?

J. R. W.

Pudlestone, Leominster.

REPLY TO No. 88.—It would be unwise to attempt to transfer the bees from the straw skep at this time of year, as they would be unable to fasten the combs into the frames. Their fierceness is a good sign, it shows that they are not cowed by misfortune, or in other words, the misfortune to them is not so great as it appears. The blackness of the comb is not due to the dampness, but to the fact of its having been much used for breeding purposes, the mouldiness will be cleared away by the bees when dry. The tin (not zinc) ends, as far as we know, can only be procured of their inventor, Mr. A. J. Root, Medina, Ohio, U. S., they are there patent, but may be made here, they cost a dollar per hundred, *i.e.*, 25 sets. We beg to hand you a pair as patterns, the last nearly of a hundred imported with our honey slinger. We shall be happy to prepare some cheap portfolios for the Journal, and will forward one to you as soon as they are obtained. ED.

NOTICES TO CORRESPONDENTS AND ENQUIRERS.

T.C., Market Drayton,—The Swarm Catcher is a canvas bag fixed to, and hanging from, a square wooden frame, which is attached to a long pole with a fork at the end. Its purpose is to reach swarms out of trees or hedges without the necessity for a ladder. Ladders are dangerous things to use in taking swarms, as in case of severe stinging a fall is probable, but with the swarm catcher the operator could set the bees down and run away, if so disposed. We think it is useful as an apiarian utensil.—You are in error with regard to the wire queen cages. We do not supply them, but have received one, kindly sent by one correspondent for another, who has failed to send for it.

R.S.—L.M.'s straw work is very good. If you have any doubts send cash here.

J.D.—The Woodbury, notwithstanding all that has been said against it, is a good useful hive; but we would recommend that the notches be filled and the back and front of the hive cut down, so that the frames should rest flush with the top of the sides, as in the "far-famed Stewarton." The frames would then require widening at their ends to keep them in their places, and when the combs are built in them the bottom rail and bottom rack should be removed, and the Woodbury will then come near our idea of what a hive should be. The cheapest way of obtaining hives is to buy some second-hand ones, and use them as patterns. Never place bees in a second-hand hive or super unless you are quite sure it has been thoroughly cleansed.

"IGNORAMUS" will find the information desired in this and preceding Journal.

T.C. wishes Mr. Carr to give his experience with the blanket-cover, as regards the moth.

CORRECTION.—In Mr. Carr's letter, second paragraph, "Which is *yearly*" should be "Which is *really*," &c.

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THE

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AND BEE KEEPER'S ADVISER,

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[No. 12. Vol. 1.] APRIL, 1874. [Published Monthly.]

DIRECTIONS TO CORRESPONDENTS & QUERISTS.

1.—Write in a legible hand on one side of the paper only.

2.—Use no abbreviations which are not to appear in print.

3.—Keep every query distinct and separate, and give the fullest possible particulars, stating also the kind of hive used.

4.—When requiring an immediate reply, send a stamped ADDRESSED *envelope, or stamps for cost of telegram.*

The British Bee Journal.

APRIL, 1874.

We are glad to be enabled to inform our readers that the managers of the Crystal Palace have consented to provide means by which the live bees exhibited at the coming Apicultural Show, may find egress from the building, and take their flight in the open air, so that they may be seen under perfectly natural conditions. We have the greatest pleasure in announcing also, that an outside balcony will be set apart for the use of those willing to shew the different modes of manipulation with bees in hives of the various kinds in use, so that the *mystery of the bee hive* may be revealed to the public, and the superstitions of centuries swept away. Familiarising the public with bees, showing their harmlessness, and how easily they may almost be made to obey orders, will doubtless turn many to the pursuit of bee keeping, who now dread to enter a bee garden, and as from the position of the balcony, the manipulation may be witnessed by the visitors, through the glass walls of the palace, within which they will be in perfect safety, we have little doubt but that it will be one of the most attractive features of the show. The list of subscriptions promised to the prize fund continue to increase, and now amounts to over sixty pounds, and notwithstanding the adverse criticism of the proposed schedule of prizes, which has appeared in the columns of the *Journal of Horticulture*, coupled with innuendoes which are beneath contempt, and reflect only the feelings of the writers, we have every reason to believe that the proposal as a whole, is generally acceptable, and that it will be attended with most successful and beneficial results. This proposal is not the result of any "hole and corner" meetings, nor is it got up for the special behest of any clique or individual; from the first it has been openly and publicly discussed, and the aid and co-operation of the most advanced bee keepers have been asked to enable us to produce a schedule of prizes to be offered, which should present attractions to bee keepers of every grade, and which we hope will enlist the sympathies of the many interested in the promotion of the science of apiculture, who yet take no active part therein, so that a double stimulus may be given to the pursuit which Mr. Shirley Hibberd so happily describes as a glorious hobby, "Yes, bee keeping is a glorious hobby."

We think the time has arrived when the original proposal to form a society of bee keepers, should be well considered, and whether it be called a Guild, or an Association, matters little in the long run, but the establishment of a central society we think under the present aspect of affairs, most desirable. The proposal to hold the exhibition at the Crystal Palace, having been set in motion: like a huge machine requires considerable thought and care in its management. Its motive power comes from the subscribers to the prize fund, and we hold that to them belong the right to govern, and direct it, and to them we confidently

appeal to take charge of the machinery, which is evidently destined to raise Apiculture to its place with the sister sciences, Agriculture and Horticulture.

As these objects tend in one direction, we think a combination of them might be efficacious in furthering the general interest, and therefore offer a suggestion, which almost amounts to a proposition, that all those who have subscribed, or prior to the first day of May next, may subscribe to the prize fund of the exhibition, shall constitute themselves a National Association for the Advancement of Apiculture.

This may seem a startling suggestion, but having been well considered, it is made in all sincerity, and from a firm conviction of its value, if carried out, as a means to the end desired.

Should the subscribers to the prize fund consent to this suggestion, they will incur no personal responsibility whatever, beyond that usually accompanying an expression of opinion; they will exist as a body, from which the guiding power, the working committee, may be formed, which committee may consist of all those who make it their pleasure or business to attend the place of meeting, which for the purposes of the present object, should we think, be in London. In our next issue, we will name a rendezvous, giving at least a fortnight's notice, to which we shall cordially invite all who have by their subscriptions, "purchased" the right to be present, when the election of officers, and sub-committees, and the nomination of judges will doubtless be proceeded with in the usual way. Subscribers who may be unable to attend the meetings in London, can express their views by letter, with every confidence that they will receive the fullest consideration, so long as the present promoters of the exhibition have any active share in its management.

Our next issue will be the first of a new volume of the *British Bee Journal*, the present being the last of vol. 1. We trust our first endeavours as journalists have proved that our great desire has been the advancement of the science in which we are all so deeply interested. The immediate reply department, judging from the numerous letters of congratulation, which we have received, has given the greatest possible satisfaction and has been attended with the best results.

"A word in season, how good is it."

Our experience during the past year has been most encouraging, and in expressing our heartfelt thanks for the many favours we have received, and the hope that the same kind consideration and patronage hitherto shewn to us will be continued, we would remind our friends that by a little personal exertion in canvassing for new subscribers, each one inducing one other, our circulation may be easily doubled, and the *British Bee Journal*, no longer tentative, will become the established organ of British Apiculture.

WHAT TO DO, AND WHEN AND HOW TO DO IT.

—o—

April is of all the months in the year the most critical for the bee keeper, as upon its issues mainly depend the future well being of his colonies. The month of March has passed without its usual visitation of wind and storm, and excepting a few of its early days, has been bright and genial, and as a consequence vegetation is remarkably forward, and bees are busy, as bees will be whenever occasion offers. All hives should be carefully cleaned, and freed from vermin of all kinds, spiders destroyed wherever seen, queen wasps also should be rigorously pursued and slaughtered, as every one now killed will prevent the establishment of a colony of wasps, to plague the bees in the autumn. This is the month in which bees should be stimulated to the utmost, so that they may fully gratify their breeding propensities, and ensure large forces of workers for early swarming, or honey gathering as may be most desired. It must not be forgotten that in April the rough weather due in March, but which has not yet appeared, may suddenly come upon us, and seal our hives for many days together, rendering inspection out of the question, jeopardizing much valuable brood, and causing the starvation of many colonies, which, having by the fineness of the weather, been tempted to extraordinary breeding, are suddenly cut off from outdoor supplies.

It may appear like "harping on one string," to continue our cautions on feeding, but at no time of the year are they more necessary than during the early breeding season. A superabundance of food suddenly given is positively injurious, as the bees then invariably store their newly acquired supplies close round their breeding nest, and thus hinder the deposition of eggs; therefore, as so often recommended, food should be given in small quantities only. Hives that are strong in stores need not be fed to create the necessary stimulus; in such cases the cutting off the tops of some sealed honey cells, will have the desired effect, as the bees will at once remove the honey and store it near the brood cells.

which will cause sufficient excitement. Should cold rough weather ensue, while breeding is being rapidly carried on, it would be well to contract the entrances of hives to prevent the rush of cold air into them. Upward ventilation is not required during the breeding season, heat and moisture being apparently necessary for the proper production of the brood. Care must, however, be taken to prevent the hive becoming chilled, or condensation will take place, brood combs will be deserted, and the brood in them perish, and dysentery will most assuredly supervene, which may develope (or degenerate) into foul brood.

We have been hoping ere this to have been enabled to furnish our readers with an engraving of a specimen of foul brood, from nature, and for some months a comb kindly furnished by a valued correspondent and subscriber, was left in the hands of a clever photographer in the hope that a true specimen of it might be obtained for engraving, but from its peculiarity of colour, &c., it appears to have been impossible, and hence a delay, which to those unacquainted with the appearance of the disease, may be of serious consequence, and one which we most seriously regret. We trust however, that in our new issue (vol. 2), this will be remedied, and that the foul brood question will be fully and freely discussed therein.

Where bees have been well cared-for, should the weather continue mild (which we hardly dare to hope for), drones will soon make their appearance, and swarming commence; in view of which hives should be prepared, and stands and roofs procured, so that when the time comes, everything may be in readiness. Bearing in mind that from fifteen to twenty days usually elapse after swarms have departed, before the young queens become fertile, it would be well about the middle of this month, provided the weather will permit, to promote the production of young queens, which may be raised in nuclei, and when fertilized, may be immediately given to colonies from which swarms have departed, or from which they have been taken, so as to prevent loss of time, in queen raising in individual hives, and what is of still greater importance, where the acquisition of honey is the object in view, to prevent also the issue of second and after swarms. Some bee keepers of our acquaintance have already provided twin nucleus frames of the pattern invented by Mr. Cheshire, described on page 169, and having filled them with empty combs, have introduced them to their strongest hives, so as to ensure that they be well stored with eggs and brood, and thus made available for queen raising. These frames are intended for boxes nine inches deep, seven and a half inches from front to rear, and about six inches wide, so that two of the twin frames when divided will form four nucleus frames, and will just fill them, thus one full Woodbury hive may be made to form five nuclei, each of which having a sealed queen cell, would raise its own queen, and prevent the loss of much valuable time to other stocks.

It is not absolutely necessary, in the formation of nuclei, to proceed as just described, as the combs may be cut out of the parent stock, and fitted into the nucleus frames after the queen cells have been raised, or the nucleus frames may be fitted with spare comb, and the queen cells cut out and distributed, splicing one into each nucleus. Many bee keepers divide their stocks and allow all the sub-divisions to raise queens for themselves, but it has been so clearly proved that queen cells raised in weak nuclei, do not produce nearly such good queens as issue from those raised in strong stocks, that we always recommend the latter mode of raising them to a sealed condition, when they may be given to nuclei to be hatched out, and cared-for until fertilized. In stocking a nucleus with combs and bees from a full hive, choose combs from which young bees are hatching out, and having placed them in the nucleus box, take other frames, on which young bees may be seen, and shake them into it also, repeating the operation until the nucleus is filled with young bees, the majority of which never before having been outside their hive will remain in the nucleus box, which may be placed in any part of the garden. Nuclei, which are made with empty combs, require more bees than those with full ones, as there will be no brood to hatch and keep up the populations, they may however, always be added to, by giving young bees as just directed, shaking them from the combs in front of the nucleus hive, into which they will run unmolested.

QUEENS AND THEIR PROGENY.

On the authority of the Rev. L. L. Langstroth, the author of that charming work, "The Hive and Honey Bee," the first demonstration of true parthenogenesis in the honey bee, was made by Professor Leidy, of Philadelphia. The reverend author says in his first edition, May 1853, "In the autumn of 1852, my assistant found in one of my hives a young queen, the whole of whose progeny were drones. . . . This queen had laid a number of eggs in one of the combs, and the young bees from some of them were just emerging from the cells. . . . As there were

none but worker cells in the hive, they were reared in them, and not having space for their full development, they were dwarfed in size, although the bees, to give them more room had pieced out the cells so as to make them larger than usual! Size excepted, they appeared as perfect as any other drones. . . . The queen was removed from the hive and carefully examined. Her wings, although they appeared to be perfect, were so paralysed that she could not fly. It seemed probable, therefore, that she had never been able to leave the hive for impregnation. To settle the question beyond the possibility of doubt, I submitted the queen to Dr. Joseph Leidy for microscopic examination. The following is an extract from his report: "The ovaries were filled with eggs, the poison sac was full of fluid. . . . The spermatheca was distended with a perfectly colourless transparent viscid liquid, without a trace of spermatozoa.' This examination seems perfectly to sustain the theory of Dzierzon, and to demonstrate that queens to not need to be impregnated in order to lay the eggs of males."

This interesting subject will perhaps be better understood by reference to the engraving, which represents (highly magnified) the ovaries, oviduct, and spermatheca of a queen bee. Queen bees, as is well known, are raised from eggs, which, but for the special treatment they receive from the worker nurses, would in the ordinary course of events, become workers themselves, and microscopical investigation has proved, beyond the shadow of a doubt, that all worker bees possess, in a greater or less degree of development, all the attributes of perfect females, or queens, and hence occasionally, in the absence of a perfect queen mother, under an influence which is not understood, but usually defined as exaltation, they are enabled to secrete and deposit eggs, which in due course become apparently perfect living drones.

Dissection has proved that these fertile worker bees are positively incapable of fertilization by drones, and therefore the fact of their eggs developing into living organisms led to the belief that bees had occasionally powers of reproduction, similar to those possessed by aphides, the females of which have the ability to reproduce their species during several generations without intercourse with the males, but when it was discovered that the eggs of worker bees and those of unfertilized queens were precisely similar, and always developed into drones, whether they were deposited in drone or worker cells, a field was opened for wider investigation; out of which arose the Pastor Dzierzon's startling theory of reproduction, which theory he in 1845 most ably propounded in the *Bienenzeitung*, of Eichstadt, and which we here give in his own words, extracted from Von Siebolds "True Parthenogensis in the Honey Bee."

"Presupposing what will be referred to and proved in the following numbers, that the queen (female bee) to become good for anything must be fertilized by a drone (male bee), and that the fertilization takes place in the air, I express the conviction, from which all phenomena and mysteries may be perfectly explained, that the drone eggs do not require fecundation; but that the co-operation of the drones is absolutely necessary when worker bees are to be produced. Whilst in the higher animals the male is the perfect and ruling creature, the bull keeps together and, as it were, guards the herd of cattle, and the cock does the same by the hens: the reverse of this takes place in insects.

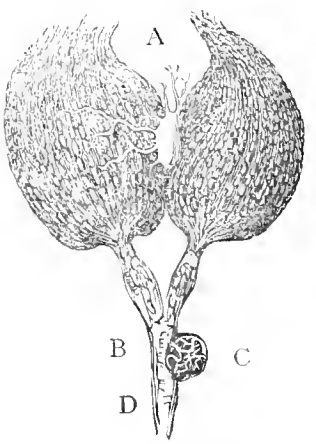
"In the Wasps, Hornets, Humble-Bees, Ants, and especially in the Bees, the perfect female forms the central point and holds the swarm together. As even the drones are subordinated to her, they are also in themselves altogether imperfect creatures, for the production of which so many forces and conditions are not necessary, even on the part of nature, as for the production of the queen, and what is the same thing, of the workers.

"(The ancients even appear to have indicated this by the denomination Fucus). The truth of this assertion appears at once from the fact that as every thing that is capable of the more difficult and greater effect may also produce the easier and smaller one, so every stock which is in a condition to produce worker bees, may also produce drones when suitable cells are not wanting in the nest; but not inversely.

"In fertilization the oviaries are not fecundated, but the seminal receptacle, that little vescicle or knot, which in the young queen is filled with a watery moisture, is saturated with semen, after which it is more clearly distinguishable, from its white colour. The activity of the ovary in the normal state only commences after fertilization, but is not necessarily caused thereby, hence many unfecundated queens lay no eggs at all, whilst others lay drone eggs; and even workers do the latter, although from their want of a seminal receptacle I regard them as quite incapable of fertilization.

"I am convinced that such eggs are sufficient for the production of drones, whilst the egg from which a queen or a worker is to be developed must come in contact with a filled seminal receptacle.

"This is certainly only a hypothesis, and will probably only remain so, but one to which every close observer will be no more able to refuse his assent than the hypothesis of Copernicus, that the earth turns round upon its axis; for all the mysterious phenomena in the commonwealth of the bees are very simply explained by it.



As will be seen in the engraving the ovaries are two in number, the ducts from which unite just above the spermatheca, and it was natural to infer that in one of these, drone eggs were produced, and in the other those which became workers, and that the

queen exercised a discretionary power in their deposition. The office of the spermatheca, the little globular sac on the side of the oviduct, was supposed to be the furnishing of the *viscid fluid*, with which the eggs were (as supposed) anointed in passing, to cause them to adhere to the bottom of the cells wherein they were deposited, but Dzierzon in a separate book *Theori und Praxis de neuen Bienenfreundes*, published in 1849, summed up his views upon the reproduction of bees as a regular theory in the following manner (see "Siebold" p. 41) :—

"Therefore, and this must be well borne in mind, in the fertilization of the queen, the ovary is not impregnated, but this vesicle or seminal receptacle is penetrated or filled by the male semen. By this, much, nay all of what was enigmatical is solved, especially how the queen can lay fertile eggs in the early spring when there are no males in the hive. The fertilization takes place once for all. The queen then never flies out again except when the whole colony removes. When she has begun to lay, we may without scruple, cut off her wings ; she will still remain fertile until her death. But in her youth, every queen must have flown out at least once, because the fertilization only takes place in the air ; therefore no queen which has been lame in her wings from birth, can ever be perfectly fertile.

"I say, perfectly fertile, or capable of producing both sexes. For to lay drone eggs, according to my experience, requires no fecundation at all. This is exactly the new and peculiar part in my theory, which I at first only ventured to put forth as a hypothesis, but which has since been completely confirmed.

"Three young queens with imperfect wings have occurred during the past summer, and these, although from the imperfection of their wings, they could evidently never have taken the fertilizing flight, and also on dissection proved to be unfecundated, nevertheless laid drone eggs. By this, all the mysteries which we have hitherto vainly attempted to unriddle, are completely solved. In the first place the enigma : Why is it that many mothers, they may be queens or workers in their form, are only capable of propagating the male sex or drones? Because the former are either unfecundated or their fertility is exhausted, the latter, on the other hand, are incapable of fertilization.

"For I am firmly convinced that the egg laying worker-bees, which occur abnormally, are, from the want of a seminal receptacle, just as little capable of being fertilized, as the young queens from the want of sound wings. Moreover there is certainly no doubt, that by the peculiar tone of her wings the queen allures the drones to her and disposes them to fertilization, of which a worker is of course incapable.

"In the second place, the before-mentioned power of the fertile queen to lay worker and drone eggs at pleasure, is rendered very easy of explanation by the fact, that the drone eggs require no impregnation, but bring the germ of life with them out of the ovary ; whilst otherwise it would be inexplicable and incredible. Thus, as it has already been shown that the ovaries are not impregnated, but that the seminal receptacle is filled during fertilization, the queen has it in her power to deposit an egg just as it comes from the ovary and as unfecundated mothers lay it ; or by the action of the seminal receptacle, past which it must glide, to invest it with a higher degree, a higher potency of fertility, and to awaken in it the germ of a more perfect being, namely a queen or a worker-bee.

"This of course she does instinctively, induced by the width of the cell to be furnished. For the production of females in a bee-hive, therefore more conditions and forces are necessary than for the production of males or drones. Every mother which is capable of producing worker brood, can also lay drone eggs, but not inversely."

Thousands of beekeepers have read with astonishment and incredulity the oft-repeated statement that *the drone progeny of a pure bred Ligurian queen which has mated with a black drone are always pure Ligurians, while the workers' progeny, although shewing the markings of the Ligurian, are always hybrids,* and *vice versa* ; but a knowledge of the law which governs their production will induce a strong belief in the truth of the assertion. In the first place it is proved beyond the possibility of doubt that the spermatic fluid imparted to the young queen by the drone of her selection on her wedding flight, instead of passing to the ovaries and impregnating the eggs therein, is conveyed into the little sac or spermatheca, *c.*, which lies between the ovaries, *a.*, and the ovipositor, *d.*, on the side of the oviduct *b.*, along which every egg deposited must necessarily pass on its way to the ovipositor, and in passing, if it comes into contact with the fluid in the spermatheca, it (the egg) will thereby be impregnated, and in due course either become an undeveloped female or worker bee, or may by the wonderful power which bees possess be developed into a perfect female, or queen ; but in either case, as the egg had received the life-giving influence of both the queen, and the drone with which she had mated, the young bee, whether queen or worker, will partake of the nature of both, and should the queen have mated with a drone of her own breed, she (the young bee) will be pure (so-called), but if the drone was of a different breed, the young progeny would be hybrid ; but supposing the egg on its passage down the oviduct, *b.*, escaped the influence of the fluid in the spermatheca, *c.*, it would in the ordinary course become a drone, which partaking only of the nature of the queen mother, would be of her standard of purity.

Correspondence.

OPEN *versus* CLOSE FITTING CROWN BOARDS.

To the Editor of the BRITISH BEE JOURNAL

DEAR SIR,—I have been a silent yet not an indifferent observer of the gradual elaboration of the new hive. Month after month has brought its interesting instalment of directions and particulars, and you have at length, as it were, unveiled the work by putting before us a capital engraving.

After a careful consideration of the whole, I am for one convinced that you have introduced to us a most admirable and original form, which deserves to be fully tried in every intelligently conducted apiary. Knowing that you would be of the last to imagine that finality had been reached, and feeling that the working of the hive by many practical hands, while causing not a few notes to be sounded in its praise would evolve in all probability, suggestions tending to make it more surely "the hive of the future," I venture to bring before my fellow readers one or two important improvements it contains which may not be generally sufficiently understood or appreciated.

The arrangement of your top bars, coming directly against the roof, imitates nature, best maintains temperature, and admits of being more easily and advantageously ventilated than the usual form in bar frame hives. Certainly bees, very occasionally and under peculiar circumstances, build their combs at a distance from the top of the hollow they occupy, be it hive or otherwise, and then they curiously fill in the interstitial spaces with wax tracery, leaving only small spaces through which ventilation is carried on. They commonly commence their combs from the roof of their habitat. In the straw skep the plates of comb fit up to the dome, and are worked to the sides as far down as honey is stored. In this fact lies the only superiority of the straw skep over the usual form of bar frame hive. It has been said that the former is frequently drier in the winter than the latter, *because* the skep is constructed of ventilating straw, and so bar frame hives are often, at increased expense, made of this latter material, placed in frames of wood, but no greater fallacy can exist, for the straw actually ventilates less than wood, and is interiorly less pervious, since it is coated with a fine layer of silica, upon which the bees plaster propolis, to which labour they are invited by the sharp hollows between the individual straws.

The only hive which has given me uneasiness this winter by its dampness within, is a straw Woodbury most completely covered without, and standing near to hives of the same pattern in wood, and similarly protected, with which it compares most unfavourably. Now the virtue in the skep, if virtue there be, lies not in the straw, but in the fact that the combs reach the roof. Here also the Stewarton has an advantage, and a far greater one, I strongly believe, than that given by its circloid form. This is assertion some will say:—let me try to give the proof. I had the honour sometime since of pointing out that honey is converted by the vital processes of the bee into carbonic acid and water, the former leaving the spiracles in the form of an invisible and odourless gas, the latter accompanying it as vapour. In summer these products are got rid of with sufficient facility in any form of hive, having an adequate entrance way, but in winter the bees clustering for warmth depend for the renewal of the air of the hive, either upon gaseous diffusion; upward ventilation, admitting air beneath; a current driven in at the entrance door, and pushing carbonized air out, or a combination of these. Presumably almost all of us understand these matters, but may I be forgiven in attempting an explanation for the benefit of the few yet needing light here. Carbonic acid is once and a half the weight of the air when both are at the same temperature, but as it leaves the bee cluster hot it is rarefied, light, rises, and in the ordinary form of bar frame hive, spreads itself between the frames and top board, unless escaping by upward ventilation, and cooling against the hive roof it tends again to fall but does not do so like water, sinking to the bottom of a bottle containing oil, but intermingles with and diffuses itself into the surrounding air. This happens in a crowded room, the carbonic acid gas does not form a heavy layer near the floor, but is found in nearly an equal proportion in every part. In the hive in like manner the carbonic acid soon taints all the air, and that rising into the cluster from beneath, instead of containing its normal quantity of oxygen, has this latter gas, the true source both of energy and warmth, to some extent replaced by the somniferous carbonic acid. Indeed, could we see the currents in a badly ventilated open crown board hive, we should find the air rising over the cluster, moving sideways, descending between the outer space unoccupied combs, flowing to the centre on the floor board, and again rising up through the bees. It is true that at the mouth diffusion will operate, and some carbonic acid will continually escape to make room for pure air, but the change is incomplete and inadequate. With upward ventilation this prejudical presence of carbonic acid is only minimized, unless the ventilation be such in amount as to jeopardize the stock in cold and boisterous weather by the draft it must occasion. The worth of this upward ventilation has the testimony of your invaluable contributor, "A Renfrewshire Bee Keeper," page 15, and our esteemed brother bee keepers, Mr. William Carr, page 118, and "A Lanarkshire Bee Keeper," page 137. The plan they all advocate is essentially that of the top quilt, the very one which you propose for the Abbott hive. Mr. Pettigrew indeed tells us in the

Journal of Horticulture, that no ventilation is necessary, but the statement, being Mr. Pettigrew's, gives me litttle uneasiness, especially after finding myself in such good company, nor do I fail to remark that Mr. Pettigrew pleads guilty to foul brood in his apiary. Linking this with his opinion many will not be slow in seeing here a probable cause and effect. The disadvantages arising from impure air circulating in the cluster, are unfortunately neither the only nor the chief evils, inevitably connected with the open crown board, for it is also the cause of the dampness and consequent mouldiness of the outer combs. We must again appeal to scientific fact. Twenty four ounces of honey digested (see October number), produce no less than eighteen ounces of water. This is held in solution by the hot air, but as this, while circulating passes over the cold deserted combs, its water is expressed from it, and deposited in dew, which dripping collects in little pools on the floor board, fungoid growth begins, and the hive is quickly the fit victim for disease. I do not now intend to assert that no moisture is at any time deposited upon the combs by air entering the hive from without, on the contrary, this really happens, but not in very cold weather, as supposed. During a long spell of frost, the walls of our houses will remain perfectly dry as they get constantly colder and colder, but when the frost breaks, and it becomes comparatively warm, they are found to stream with water. Why? The warm air entering from without, carries its charge of moisture, but touching against the icy walls it yields its heat and its water at the same time, and we see at once the discomforting result referred to. The same happens in bee hives after frost, to the outer combs, but then the bees are usually on the stir gathering stores towards their cluster, and their distributed warmth puts things quickly right again.

How different however, is the case if the hive have no air space between the combs and roof, the heated moisture-holding air rises above the bees to be slowly dissipated through the ventilating cover, or to descend again between the said combs whose temperature is maintained by the gradually radiated and conducted heat, so that no vapour condenses, no mildew is produced upon their surfaces. The outer combs divested of bees are cold it is true, but the air between them is dry, and nearly stationary, both combs and air are in this state, marvellous non-conductors: as the stored honey is stiffened, and as it, in virtue of the water it contains, can only be warmed by convection, the process of passing heat through a sealed comb is an extremely slow one. They (the outer combs) do much to retain the life-giving heat of the brood nest, and for this reason it is a question whether they should ever be removed in winter, as one of your correspondents hints.

Another most important advantage in the close roof arises from the fact that only that air passes between the combs which is utilized by the bees, so that no heat is wasted. In open tops, if the cluster be weak, and say, occupies only the third of the length of the comb, a current of cold air is passing over the very combs occupied by the cluster, twice as great in volume as that needed by the bees for breathing purposes, most wastefully cooling them. Other points remain to be mentioned but I fear to weary, and so will only call to mind that every stock in an open top hive makes an effort to overcome the disadvantages of its position by building between the honey board and top bar, a hint which we should do well to ponder. In conclusion the hive now before us gives the frames up to the roof, and the means of slow upward ventilation embodying two principles, which must, I believe, from the considerations above, be ultimately universally adopted.

F. CHESHIRE.

QUEEN CAGES AND UNITING QUEENS.

—o—

SIR,—Your correspondent on page 161 is quite right about the risk and inconvenience in using the pipe cover queen cage, for uniting queens, as used by Mr. Woodbury, and illustrated on page 103 of the *British Bee Journal*. When a Ligurian queen is united to a strange stock of bees, it should be done without disturbing any of the bees surrounding the queen cage, so that those bees that have been clustering round, and feeding her whilst in the cage, should be her body guard, when she walks in royal dignity from her confinement on to the combs, to rule over her new subjects.

From experience of the risk attending the uniting of Ligurian queens to common black stocks, which I described in the *Journal of Horticulture*, November, 1864, I at once set to work and made a queen cage drawings of which I sent to some of my correspondents, and as your contributor wishes for a successful queen cage that can be opened when inside the hive without disturbing the bees, I send you a drawing and description of the one I made in 1864 for the benefit of bee keepers.

The cage is made of perforated zinc, and measures

five inches long, one and a quarter inches wide, and three eights of an inch open in the inside. This is fastened at one side with wire hinges to the centre of a cover or lid two and a half inches square. In the inside at the bottom, there is another door or lid, fastened with wire hinges on one side. Two wires are fastened to the outside of this door, one of which goes through one of the holes in the cage, level with the door when shut or horizontal; and the other wire through a hole on the other side at the bottom of the cage, level with the outside of the door when wide open or perpendicular. These two wires are carried up through the top lid on opposite sides of the cage, and go over a piece of wood, about three quarters of an inch high, and a quarter of an inch thick, and the ends of the wires are fastened to the top lid or cover, (see fig. 1 and 2.)

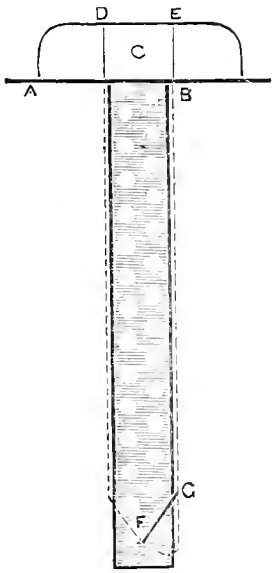


FIG. 1, END OF CAGE.

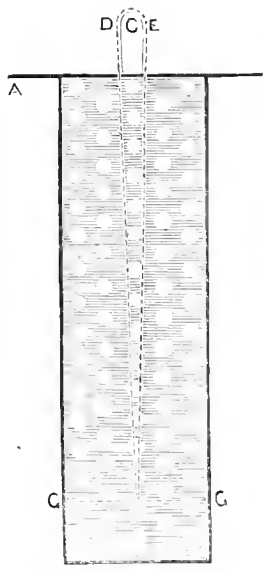


FIG. 2, SIDE OF CAGE.

A Top door or lid.
B Hinge of top door.
C Wood peg to hold both doors shut.
D Top loop of wire to shut the bottom door.
E Top loop of wire to open the bottom door.
F Bottom door partly opened.
G Hinges of bottom door.

Scale half the original size.

Having removed the common black queen, I close the hive again, shut the bottom door of the cage, and in a room, I catch one of the worker bees belonging to the Ligurian queen, by the wings or the side of her body, between my first finger and thumb, so that it cannot sting me, and having opened the top lid or door, I put it in the cage. I do the same with six others, making seven worker bees (the mystical number so often mentioned in the Bible), to attend and feed their queen, which I then carefully put into the cage the same way. I put the piece of wood, or peg, through the wire loop on the top of the cage, that opens the door at the bottom, and then through the loop that closes the bottom door, and when the peg is in the two loops, both the top and bottom doors are locked.

I then carry the cage to the stock from which I had removed the black queen, and having taken the plug out of the one-and-a-half-inch feeding hole in the cover, I push the cage down between two combs, until the top lid of the cage rests on the hive cover. I next put a piece of woollen cloth over the top of the cage, and leave the queen confined until dark the night but one after, when I gently draw the peg out of the first loop, and then pull the other wire, which opens the lid at the bottom of the cage, without disturbing a bee, and the valuable Ligurian queen walks out at her leisure, at the bottom of the cage upon the comb in the centre of the brood nest, (with the quiet dignity that becomes her royal majesty) surrounded by her body guard, and receives the homage of her new subjects, and commences laying eggs at once. During the confinement of the queen, she can pass from one end of the cage to the other, which touches the honey comb at each side near the top, from which the bees can get food when required, and the cage reaches down to the very centre of the brood nest, which is the warmest part of the hive. Nothing injures a queen more than being chilled, as it has a great effect upon her egg laying powers in after life.

The cage can be quietly pulled up the next day, and the plug put into the hole again. Do not excite the bees for a few days, after which you may examine the hive, and you will find thousands of eggs laid by the Ligurian queen.

Next month I will describe another very simple queen cage that I have invented.

WILLIAM CARR,

Newton Heath, near Manchester.

"THINKS I TO MYSELF."

DEAR SIR,—The other day in passing through town, I purchased at a bookstall a book on "Bees, their Habits, Management, and Treatment, by the Rev. J. G. Wood, author of the *Illustrated Natural History*," a new edition with illustrations, published only so lately as 1860. Thinks I to myself,—That's just what I want, so having paid sixpence for it I departed with my treasure. The book contains 114

pages, and as is often the case with one eager to get at the pith of a thing, I opened it in the middle, and read, page 56. "If a new or strange queen be introduced into the hive within two or three hours after they (the bees) have lost their rightful sovereign, she will experience an opposite kind of manifestion of bee loyalty. However true a queen by nature she may be, she is here a pretender. The bees therefore, surround her, and starve her to death, they have too much respect for queens to sting them." Thinks I to myself, *That's a bumper*! A little farther on, after saying a little which set me "thinking" a great deal, the author adds, "If twenty four hours have passed since the loss of the ordinary queen, the bees are so delighted at the thought of a successor to the vacant throne, that a stranger queen is gladly accepted, the instant she presents herself." Thinks I to myself, *that's another*. Then comes an extract from "Schirach, a clergyman of Little Bantzen;" on the metamorphosis of the worms of workers into queens. Thinks I to myself, its a pity all the book is not extracted from "Schirach"

The author then proceeds, "These facts seem wonderful enough, but Mr. P., a well-known practical apiarist, will not allow this strange (breeding) power to be explained by the assertion that the metamorphosis is accomplished by permitting the *female* grub to attain to its full development, but makes it even more extraordinary by denying that it is merely the eggs of workers that can be thus metamorphosed. He, Mr. P., says, "How startling so ever it may seem, how doubtful so ever my friends may be, I, were I worth a thousand pounds, and given to betting, would wager it all, that I would cause the bees to metamorphose all the eggs that a queen may lay into drones exclusively; nay, I would cause them to be metamorphosed into working bees in March, into drones in April, and so on alternately, and a few into queens at any time." Thinks I to myself, 'I wish you had the thousand pounds and would stake." This statement, as explained in a foot note, appeared in the *Gardeners Chronicle*, for 1834, page 501, and respecting it the reverend author, on "Bees" says in 1860, "This is a point to which it would be well if scientific men would give renewed attention," and adds, "All the known facts appear at present to favour Mr. P—s statements." Thinks I to myself, 'Artemus,' "We are movin' onnards."

THINKS I.

BAD HONEY HARVEST OF 1873.

SIR, The question has been, I think, asked in your Journal why last year was a bad honey harvest, notwithstanding the abundance of flowers? It has occurred to me that the failure arose from the coldness of the nights, which prevented the bees remaining up in the supers and making wax by night. I took notice of their diminished numbers in my own supers at night, and also found the stock boxes of an inch and a half board, were in the autumn much heavier in proportion than the thinner, and less protected hives. The in-gathering of honey was remarkably bad in this neighbourhood, which I attribute to our clay soil, being a bad conductor of heat, having caused the nights to be still colder.

If my conjecture be right, means which I need not mention, might be used to remedy the evil another year.

O. B. T.

Near Shepton Mallet.

ARTIFICIAL FERTILIZATION.

SIR,—In an article upon impregnation, a statement based on Homes Lectures occurs in which it is affirmed that "the great anatomist, John Hunter, succeeded in impregnating the eggs of a bee by spermatozoa taken from the spermatheca of another bee.

Can you inform me where in the writings of that great man, this is noted as a fact?

I have always understood he was unable to verify the allegation of fertile bees possessing the power of laying eggs capable of development without impregnation.

He performed certain experiments upon moths, which he thought might be applied to bees, but I am not aware of his having succeeded in applying them.

Are queens referred to in the above sentence?

The eggs of unmated queens, or those of fertile workers cannot be fertilized by spermatozoa taken from the spermatheca of a worker, for the simple reason that not a single spermatozoa can be found there.

QUESTIONER.

REPLY.—In the article referred to by "Questioner," the assertion that John Hunter succeeded in impregnating the eggs of a bee from spermatozoa taken from another bee was made on the authority of Professor T. Rymer Jones, in his Animal Kingdom, who there distinctly so stated it with an appended note, referring to "Homes Lectures." Not having at the time access to the latter work, I did not attempt to verify the statement, but have now taken some trouble to do so, and find that the Professor is wrong, so far as the bee is concerned, and the lead of so eminent an

anatomist decoyed me into the same error, which I must plead as my excuse. Sir Everard Horne, says, "Mr. Hunter in the year 1774, instituted a set of experiments in which I assisted him. He kept a female from the male, and when she began to lay her eggs he inbued the point of a camel's hair pencil with semen from the receptacle of another female, in which it had been filled, and as the eggs of the unimpregnated female left the oviduct, he gave them in succession a touch with the brush, and some of them were actually impregnated and produced young. In many of the attempts the experiment failed, but succeeded in sufficient number to establish the fact. The moth of the silkworm was the insect employed in these experiments."

The subject being so far corrected, thanks to the query of your correspondent, "Questioner," I rather fancy a more hopeful case is opened as to the possibility of artificial impregnation of bees eggs. I believe a century ago Parthenogenesis was non proven, if it was even suspected, and had John Hunter succeeded in rearing bees from ova, which he believed he had impregnated, his conclusion, with all humility I say it, might have been an error, as modern investigation has shewn that bees (drones) may and are commonly reared from unimpregnated eggs. Parthenogenesis so far as I know does not occur with the silkworm moth, and if that is the case so much the more certain does it become, that John Hunter really did that which he and Horne believed he did. If practicable with the silkworm, why not with the bee? I am glad to see our editor intends to do his utmost in experimenting on artificial impregnation this forthcoming season, and hope now an interest in the subject is awakened, others will do the same. It is a hundred years this very year, since the great teacher of anatomy performed his experiments in the same direction! Casting a retrospect over this space of time and on the wonderful strides in natural science, the world has made, the grand aid of the modern microscope, the scientific knowledge and facility of manipulation attained with the bee, with all the valuable physiological facts gathered from the labours of generations of naturalists, will our painstaking observant apiarians let this question now aroused from its sleep of a hundred years again rest without a vigorous attempt at elucidation. Shade of John Hunter forbid! For myself, I intend to try what little I can do by personal experiment, and would willingly aid others in the same path to the best of my ability.

JOHN HUNTER.

WONDERFUL INCREASE OF STOCKS OF BEES.

—o—

SIR,—On page 171 your correspondent mentions the most marvellous increase of a stock of (I suppose) common black English bees I ever heard of with natural swarming, on Cannock Chase, Staffordshire. He says he was informed by a tenant farmer there that he once knew a man who "got seven hives out of one, in a single season," all with natural swarming. Now we have no authenticated record of such an event in this country with black bees, and we should be obliged to your correspondent if he could supply further particulars with the date of swarming.

With the Ligurian bees such things have been known, but then they are so very prolific in comparison with the common black English bee. In the *Gardeners Chronicle* of November 2nd, 1867, page 1122, I related an instance of two stocks of Ligurian bees, increasing to fourteen in 1866, all with natural swarming.

The clever German bee master, the Baron von Berlepsch, states that "he had never known a queen of the current year to lead off a swarm." The following facts prove that a queen of the current year does sometimes lead off a virgin or maiden swarm, but it is a rare occurrence, and I never heard of a second swarm of English or common black bees sending out two virgin swarms before. In May, 1866, I sent a stock of pure Ligurian bees to a clergyman in Essex, and it threw off three swarms, the first swarm sent out only one virgin swarm, but the second swarm, with the queen of the current year, sent out two virgin swarms, so this one stock that year increased to seven.

Another stock of pure Ligurian bees I despatched at the same time to the neighbourhood of Liverpool, also increased to seven; but in this case the old stock sent out four swarms, and the first swarm sent out two virgin swarms. The old stock after throwing off four swarms, got so crowded again with bees, that they hung out in a large cluster; and it was thought they would swarm again, to prevent which a large super was put on the hive, which they nearly filled with combs and honey.

Before the introduction of the Ligurian bees into England, such an increase as two stocks of bees to multiply to fourteen in one year, all with natural swarming, was never heard of.

Your correspondent also wishes to know if "spindle" and "bunt" are known in other localities

besides Staffordshire, as names for third and fourth swarms respectively. Now I am a Staffordshire man and we have now, and have had bees in North Staffordshire since the beginning of this century, and I have never heard "spindle" and "bunt" before, so fancy they must only be used by the farmer on Cannock Chase. In Staffordshire they are generally called :— Swarm, first, second and third cast, and virgin swarm, that is a swarm from a swarm of the current year.

WILLIAM CARR.

Newton Heath, near Manchester.

THE STEWARTON HIVE AND SYSTEM.

SIR,—I am glad to hear your anonymous correspondent on page 173 now employs boxes nine inches deep instead of the shallow six inch stock boxes. We shall I expect hear in a while that he has discarded the octagon form of his hive, and uses bar frames made all one size, so that they will fit every place in every hive he has.

My first expression about your correspondent did not "savour a little of rudeness" as he says, but was on the contrary very polite, (as I always had a great respect for him, and have read every article he has written since 1860 when he says he penned his first article in the *Cottage Gardener*.) I began with "A Renfrewshire Bee Keeper *I think*, makes a mistake in supposing that Robert Kerr, of Stewarton invented the Stewarton hive in 1819."

Surely your correspondents may express their thoughts and give what evidence they can for those thoughts in the Journal, without having it made a personal matter? but in last months Journal your anonymous correspondent explained why he erroneously made such a personal attack on me. I gave my evidence to prove my thoughts in a straightforward honest way, and the more I looked into the authorities, the more I was convinced that Kerr did not invent the "Octagon Stewarton Hive," so my first thoughts are more confirmed than ever, and I hope your correspondent will allow me and many readers of your Journal to keep our thoughts, which have been confirmed by many years of practical experience.

I may also tell your correspondent, Mr. Symington, that I cannot see a word in my February note, that complains about anybody using any *nom de plume* they like. I never hesitate to say what I have to say to anybody, whether they are anonymous correspondents or the most honoured names in the realm, being myself perfectly independent of all, in every respect, but I always do it in a straightforward honest manner without any paltry subterfuge, and only for the benefit of bee keepers, and I think our editor should cut out any unguarded expression of any contributor, as the best of us are liable to make mistakes.

WILLIAM CARR.

Newton Heath, near Manchester.

NOTE.—We know of nothing more irritating to correspondents than editorial interference with their contributions, and more particularly when the writers are gentlemen of position and ability. Were they really anonymous; any letter containing the faintest sign of personality would be entirely suppressed, but we consider ourselves responsible to our known contributors that their letters shall appear as written, subject of course to the correction of the accidental errors in words or sentences to which all are liable. From the first the columns of the *British Bee Journal* have been "open to its subscribers, so that their queries and replies, correspondence, and experiences may be fully and faithfully recorded," and we hold that we have no right to suppress any part or portion of what is written, unless it be libellous or insulting. Letters which bear the marks of careful correction by their writers cannot contain either hasty or unguarded expressions, and although they may show an absence of politeness and a want of consideration for the feelings of others, such *lacks* inflict injury only on the good name of those who pen them. It is a pity that those who have the interests of bee keeping so much at heart, cannot agree to differ on some of the unimportant minutiæ of the art. Except that we should all yield "honour to whom honour is due," it can be of little consequence to the present generation whether the first octagon hive or the storifying system was invented by Rusden, Kerr, Geddie, or Wren, and only as regards the history of hives generally can it have any real interest. We therefore trust that our esteemed correspondents will forbear further discussion thereon until some new facts are discovered which will incontestibly prove its origin. ED.

THE USE OF DRONES.

DEAR SIR,—I had no idea when the discussion arose about the use of drones in the bee hive that it would have been so prolonged. I thought I had traced out the habits of these industrious and peculiar insects, clearly and minutely in my last letter so that no bee keeper could misunderstand it, and I thought no further comment was required on the subject. The points J. Armstrong hinges upon are shallow and delusive. He says he once had a hive, whose queen turned out deficient in drone laying capacity, that two drones was the most the hive contained, and that after keeping it for two seasons it turned out a failure. The case might have been an exceptional one, but various reasons may be assigned for a hive being weak, want of fertility and fecundity in the queen being one of the principal. A fertile queen will usually produce a great amount of drones as well as workers, and they generally turn out well, not that they are indebted to the drones for their success, but to the strong run of working bees. When we see the best hives have done without drones during all the cold early breeding season, they cannot be much indebted to drones as heat producers or nurses when the weather is warm,

I think it does not stand to reason. This is where the mystery lies, but Mr. Armstrong appears too shy to break the seal and let in light on the subject. It may be said that in the spring bees have more time to devote to nursing than in the summer, as the weather will not permit them to go abroad so much, but on the other hand as the season advances, the temperature rises, and their services are not so much required. Had the hive in question contained a vigorous queen, and he had kept her drones down to two in number, his test would have been in some degree admissible, but by his own shewing the queen was deficient in power, and consequently gives no support to his argument. His calculation of the honey produce is erroneous, as if stocks gathered twenty pounds surplus per week, we should have them of two hundred pounds weight at the end of the season, whereas in this northern clime we seldom see hives of half that weight. He further says that the honey bag of the drone is very small, but I doubt if he is aware of their digestive powers, it is easy to weigh a number of drones, but his assertions as to what they will consume are valueless, from being incapable of proof. It is well known that in some seasons the workers are unable to fill their own honey cells, and in such cases the drone heating process is an expensive one for bee keepers, and I think that when they shew themselves in great numbers, they ought to be put down, to ease the labours of the little busy bee.

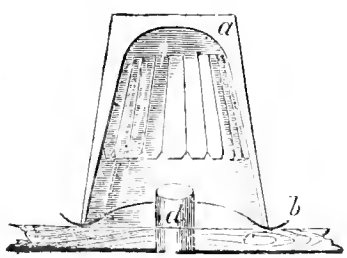
W. M. STIRLINGSHIRE.

VENTILATION.

—o—

Dear Sir,—I send you a sketch of a simple condenser, which by condensing the moist vapours of the hive as they rise through the feeding hole, affords an excellent means of ventilation without draught, so essential in the breeding season. It almost explains itself. *a* is an ale glass, *b* is a piece of lead or zinc, battered into the dished form shewn, and having a piece of tubing lined with woollen cloth, fitted into its centre, so as to afford a means of exit through the crown board, *c*, at the feeding hole, *d*. The warm moist air ascending into the glass condenses on its sides, and runs down into the dish, *b*, whence it may be emptied away by the bee keeper.

R. ASTON.



UNITING BEES.

—o—

Sir,—Your querist, Mr. John R. Cridland, Copenhagen, at 180, starts enquiry as to the risk attendant on uniting a newly hived swarm to one established eight or ten days previously.

The great secret of the safe and successful manipulation with bees in this, as in all operations, is, after first disturbing them to afford them time to fill their honey bags, when they become perfectly quiescent. The complete success of such unions is afforded, by the bees invariably so filling themselves before emerging with a swarm, and added to any stock at dusk the same evening, are almost certain of being made joyfully welcome.

"Beat-outs," if afforded the time after "notice to quit" has been served upon them by a preliminary smart beat all round, act on the same rule, by first filling themselves before beginning the ascent, and they can be similarly joined that evening without risk; in either case the morning light reveals but the surplus queen alone dead upon the floor board. I remember of having met with but one exception, which only went to prove the rule. A cottager sent me quite a large lot of driven bees in a straw skep, saved for a pecuniary consideration from the brimstone pit, at the end of a poor honey season.

I transferred them to a Stewarton octagon box, and in so doing secured her majesty *pro. tem.* in a pipe cover cage in the bung hole of the box, I next turned my attention to a little four framed nucleus, containing a young as well as a beautiful princess, with but a handful of retainers, which were also moved into a similar Stewarton. At the "gloaming" the Italians were set over the blacks, after her sable majesty was removed, the slides drawn, and the usual success unquestioned, but alas, in the morning to my astonishment, discovered, I verily believed every black bee massacred by my plucky little yellow jackets, and who were at the moment basely occupied trailing out the bodies of the defunct interlopers from the entrance, choked up with the dead. First time I saw the cottager the mystery was explained, by his informing me that the stock he had driven to send me was at starvation point, hence the catastrophe. Had he but instructed his messenger to so inform me, how easily could I have fed and saved every bee.

In uniting, as in all operations with bees, and I may add all animals, there are two ways optional to their owners to adopt The first and best I may style the imperceptible gentle plan, by which the purpose may be effected; the second by quiet rapid firmness before they have time to realise what is intended. All half measures accompanied with nervous jerkiness are about the worst. If there be no alternative from disturbing them, then do so, so thoroughly as to cause them to feel a power, which bewilders and awes them, into feeling they are helpless to resist.

The first mode is best illustrated by the swarm being placed in a hive fitted with Stewarton bars and slides, set below the older hive, a few seconds suffice for drawing the slides and having the inmates of the lower box streaming up with joyous hum ere the upper tenants have time to shake off their evenings drowsy lethargy to comprehend the state of matters. But sup-

posing the older stock and swarm be located in common straw hives, and the combs of the former sufficiently long established to be toughened to stand inverting, do so, setting it in a little cask, eke, or other handy vessel, slightly sprinkle the bees and comb with sugar syrup, flavoured with essence of peppermint, turn up the swarm and similarly treat it, then encircle its hive with left arm, hold it over and a little above the inverted old stock bringing down the extended hand of the right arm, on the top with a good thud or two, by which means the bees are entirely precipitated into the other, the floor board placed upon it, the stock returned to its original position, entrance closed for a minute to prevent the bees streaming over the landing board in the *melee*, and before they have time to ascend into the combs, the odours emitted by the startled occupants of both becomes so thoroughly commingled that the identity of the alien is for ever lost, and an amicable union is the unvarying result.

A RENFREWSHIRE BEE KEEPER.

FERTILE WORKERS.

—o—

SIR,—From the remarks on fertile workers by our much esteemed and worthy editor, see pages 172 and 173; allusions are made to an article of mine on fertile workers (which appeared in the May number of 1873) as "suggestions" but with all deference to our leader, I repudiate that assertion; I did not suggest; but gave it as my experience that fertile workers are raised just as I described, and may at a future time relate some facts regarding their origin. I will therefore in this letter confine myself to an analysis of the evidence given by our editor.

In the first instance he says that the swarm was a fine one of hybrid bees, hived in May, which did well until September, when an attempt was made to depose the then supposed regnant queen, but no trace of her could be found; six weeks after this examination a multitude of drones in different stages were found and from the number apparently a fertile worker was present. The first thing that I have to deal with is the absence of queen cells upon the worker comb, but sure signs upon the drone ones; now here is a fact worth noting, although I do not say it existed in this case; viz., that queen cells are often cleared or eaten clean away after hatching, and no trace of them can be discovered. (Not in our experience. ED.)

My suppositions in this case are thus, that the fertile worker did exist; but not prior to the death of the queen, as suggested by our editor, and the absence of queen cells bears out my experience in raising fertile workers; they are not raised in cells that have been enlarged; as is the case with perfect queens, they may be raised in common worker cells or in one almost the shape and dimensions of a perfect queen cell; commonly however in cells, resembling drone ones only more elongated, the size depending entirely upon the time overdue for perfect queen raising; and little or no attempt in these circumstances are made to form queen cells; hence the absence in this case of the acorn *cups*. The consequences following the introduction of a stranger queen are exactly what has come under my own observation.

It will be observed that our editor fails to give evidence how or when the queen was destroyed; therefore I come to the conclusion that the queen had been deposed before the examination took place in September, and that brood was in the hive at that stage, that perfect queens could not be raised, hence the presence of the fertile worker which is sure to depose any fertile queen that may be introduced; therefore if I am right, and there is no evidence to show differently, otherwise instead of refuting my experience it substantiates it, but I am quite open to conviction, and should any reliable person give proof they are raised otherwise, I will throw up the sponge. I hope that our worthy editor will be rewarded by success in any experiments he may make in the matter of fertilizing these abnormal productions, and that he will be assisted by a large staff of willing workers.

A LANARKSHIRE BEE KEEPER.

HIVES.

—o—

DEAR SIR,—I herewith send for our Journal the description and dimensions of a hive, which I have made for my own use. The reason for the dimensions are that I can put the bars of the Woodbury hive into it, to form a swarm, and with a little altering, can place the bars of this hive into the Woodbury, and besides I prefer a square hive, as not being so liable to be blown over, which I once experienced in my apiary, which is exposed on the west side, the wind being very strong sometimes on these hill sides.

The hive is 11 inches deep inside, and 19 inches square outside measure, the end boards are 17½ inches long of inch pine, and planed down to half an inch thick at the top with loose side boards, the size of the frames are one inch thick at the top, and half an inch at the bottom, with two dummy frames fitting close to back and front, reaching down to the floor board so that the hive can be contracted to a few bars at pleasure. The front and back are made of three quarter inch pine, with about one inch dead air space enclosed with half inch boards, jointed with paint, which reach to the floor board except three quarter inch, and are placed slanting, so that the inside of hive measures 15 inches at the top, and 14¼ at the bottom of the frames, leaving the outer casing, three quarter inches clear above floor board, so that there will not be so much breadth of wall at the bottom, and consequently not so much liability to crush the bees, in exchanging the board. The floor board is fastened to the hive with hooks and eyes at each corner, this may seem a useless precaution, but we found it quite necessary when removing them to the heather. The hive holds eleven frames of one inch wide, and barely half inch space between, they are made to slant

in proportion the same as the front and back, and rest upon the half inch inner boards so that the top bars of frames are 16 inches long and three eights thick, the end pieces are the same strength, and 10 inches deep, the frames are held in their places by half inch space bits and at back of hive, along the bottom there are half inch vees to keep the frames from shaking against one another, which, when in position hold them firm from collateral movement. The honey board is of full half inch pine, with strips nailed all round on the under side, quarter inch thick, which come upon the ends of bars, and hold them firmly in their places which will be useful when removing them or turning the hive up to examine the inside besides allowing the bees room to run over the bars to get to the feed, or into the super, which I think a great convenience. The entrance is cut out of the front of the hive, with perforated zinc slide attached to open or shut at pleasure. The moveable top or roof is made of half inch boards, and covered with strong zinc, to keep all perfectly dry. The appearance of the hive is almost like the Cottage Woodbury engraved on the back of the Journal, with the exception of the entrance. I forgot to state that the hive has a double window at the back, eight inches by five.

A SADDLEWORTH BEE KEEPER.

FEEDING BEES

—o—

SIR,—Owing to the bad honey season of 1873, it may be presumed that hives in general are not, at this time, well provisioned, and that feeding, in most cases, will have to be resorted to. Let me here advise all who have occasion to do so to note particularly the state of their hives; because, in many cases, the plans advised do more injury than good. For example, take a well-peopled hive, with their stores all but exhausted, and feed such a hive, in small quantities, as advised in the *Journal of Horticulture*, by A. Pettigrew, and it is nothing short of certain ruin. It raises the bees to a greater state of activity than their stores require, and the result is the bees go abroad in search of more meat, and are lured into other hives, expecting there to find something worth their while, but are destroyed in the effort, while many more fall down from mere exhaustion; thus the hives dwindle away by degrees, the bee keeper being quite unconscious of the fact, until some day he fails to see the usual activity about the hive.

To feed [illegible] that [illegible] five pounds of meat beside them, with [illegible] quantities of food is all very good, but with hives that have not that quantity they ought to get five pounds of sugar at once, and thereafter feed in small quantities every, or every other night. Unless bees have a store of meat beside them they do not breed as well as they would if they had. My advice then, is, to be sure that stocks have a supply of a few pounds of honey in addition to the small feeding. A LANARKSHIRE BEE KEEPER.

THE V HIVE.

—o—

In answer to the query implied in the last sentence on this subject on page 178, Mr. Wyatt, the inventor, has kindly favoured us with an account of his method of peopling the V hive as follows:—"First, hive the bees in an ordinary skep, and leave them till evening, then having previously blocked the entrance of the V hive, and placed therein the thirteen frames, some of which should be filled with empty combs, remove the super cover and cover of hive, and holding the straw skep over it, knock the bees out on to the top of the frames; then with a feather brush the bees down between the combs and replace the top of the hive, taking care to insert both the ventilating and super slides, and place the condensing glass over the hole above the frames. The block at the entrance may be removed next day."

The only drawbacks to this mode of introducing swarms are, first, the bees do not readily descend into a hive, even though empty combs be placed inside to tempt them, and secondly the empty combs are not easily procurable, and without them it is sometimes difficult to get the bees down between the frames at all. It would perhaps be better to remove three or four of the frames altogether, simply sliding the crown board aside, so that when the bees were poured out of the skep, they might fall bodily into the hive, when they would crowd to the part covered by the crown board, and the frames having been returned, the crown board could be easily slid into its place, and the hive closed.

One excellent feature in the V hive is the arrangement by which the frames are kept quite rigid in every possible position in which the hive may be placed. This is effected by the use of metal projecting ends to the top bars of the frames similar to those illustrated on page 53, but which are made to fit the sloping sides of the hive, and when once in their places cannot possibly move, but wedge themselves the tighter the more they are shaken. The bottom of

the V frame is kept steady by short wires, which run across the bottom of the hive in the direction of the top bars of the frames, the frames having each a saw groove cut into them in the same direction, into which the wires slide, as the frames are dropped into their places. Thus fixed, if the hive was turned bottom upwards, the frames could not move out of their places, and there is another advantage in the V frame, that inasmuch as it gradually diminishes in width downwards, the combs will most probably be built solid into it, touching all the way down on both sides, so that they will be firmer than in any other form of hive. ED.

THE WAX MOTH.

SIR,—On page 181 your correspondent "T.C." wishes Mr. Carr to give his experience with the blanket cover as regards the moth.

As the blanket covers for ventilation of hives are only put on in November, after the common moths are all dead, and removed in February, before any of their larvae are hatched out, I never find the blanket eaten with them. I have seen in other apiaries holes eaten in the blankets by mice.

Last December I was on a visit to a lady bee keeper, and on taking the bag cover, illustrated on page 108, she had filled the bag with straw, (a nice warm harbour for mice in winter), but I found a mouse had eaten a hole through the blanket, and got into the hive. I lifted out some of the combs, but found it had not had time to do much harm. We put the blanket on again, and a piece of wood three eighths of an inch thick on each corner, and placed the wood cover on the top, so that the mice could not get to the blanket underneath.

The wax moth, "Galleria Cereania" of Linnæus; called in America "The Miller" is very destructive in that country, also in Germany and Switzerland, but happily for us in England the climate does not suit them, so they soon die out and consequently do our bees no harm.

On May 2nd, 1865, I imported some stocks of Ligurian bees from Switzerland, and on transferring the bees and comb on May 5th, I found the bottom of the cells in many of the combs tunnelled by the caterpillar of the wax moth. The silken tubes were made at the bottom of the cells, near the centre division, by the insect eating a hole through the sides of the cells, and occasionally through the centre division of the comb, and as they proceed spinning a silken casing or tunnel from cell to cell. It was astonishing how quickly the caterpillar could run in this gallery or tunnel from one end of the comb to the other, and in perfect safety, as the bees are powerless to destroy the silken tunnel of the caterpillar, and each one has its own tunnel, and many of them soon destroy all the cells, either for honey or brood, and the stock perishes. I placed about fifty of these caterpillars in a tin box with some combs, and in a very short time each one had commenced its tunnel, and in a while they consumed all the comb, making it a mass of silken webs and black excrement, which was like little beads or coarse gunpowder. They thus spun their close cocoons, turned into a chrysalis (or pupa), and in August emerged into life perfect wax moths.

On April 16th, 1868, I received five stocks of Ligurian bees from Switzerland, in bar frame hives. They all had larvae of the wax moth in the combs. In three of the stocks I destroyed all the caterpillars, but left two of the worst as they were, to experiment with.

By June 8th I found the bees had got all the combs clear of the larvae, but on the floor board I found a mass of silken webs and many of the maggots in it. Whether the bees had got them out of the combs, or they had retired there to go into the chrysalis state, I cannot say, but I am inclined to think the latter. I gave these two stocks clean floor boards, and when I examined the hive on the 27th June, I found only three larvae, the combs all repaired, and filled with brood, and on subsequent examinations I never found any more traces of the wax moth.

WILLIAM CARR,

Newton Heath, near Manchester.

(To be continued.)

NOTE.—*By some unaccountable fatality, the engravings intended to illustrate this subject have been delayed in delivery until too late for publication, or lost altogether. The illustrations shall, however, appear in our next.* ED.

A warm, calm, and showery spring causeth many and early swarms, but sudden storms do hinder them. (Butler.)

AFTER a moist spring, when swarms are most plentiful, robbing is the most rife, otherwise there is less danger. (Butler.

THE NEW FRAME BAR HIVE.

—o—

DEAR SIR,—Accept my warmest thanks for the opportunity you have afforded me of thoroughly inspecting the hive made in accordance with the instructions given by you in the columns of the *British Bee Journal*. I hardly know which to admire the most, the simplicity of its construction, with the ingenuity displayed in the various contrivances for securing ease of manipulation, with a minimum of danger to the bees, or the economy of its production, as shown in the composition of so complete a hive entirely devoid of any expensive workmanship or fittings, yet combining all the requisites of a perfect hive. The device for getting rid of any tools, such as screw driver, &c., for opening and closing the hive is particularly simple and striking, and the wonder to me is that it has not been thought of before, while the arrangement of the bars and honey board, leaves nothing to be desired in the way of expedience and neatness. Both bees and bee masters have much to thank you for, and those who fail to be satisfied in the occupation and use of such a hive, will in my opinion be very hard to please. May its production in the spring of 1874, be a good omen of a successful termination to a year that I think will be a very eventful one in the annals of English apiculture.

R. SYMINGTON.

The Cottage, Oxendon, Market Harborough.

BEE keeping and bee management are in common with agriculture and the proper treatment of soils, yet in their infancy. But the time is probably not far distant when hundreds of colonies will be kept on improved systems in many districts where at present dozens of them cannot be found.

IT is conceded that those localities which are suited to the cultivation of white clover and buck wheat, are also suited to the production of honey, and that where a poppy will prosper, a bee will prosper also; consequently there are few situations where bee keeping might not be successfully carried on.

IN their labour and order at home and abroad, bees are so admirable, that they may be a pattern unto men, both of the one and the other. For unless they be hindered by weather, weakness, or want of matter to work on, their labour never ceaseth. (Butler.)

OUR SALE COLUMN.

—o—

This column is open to subscribers only, to enable them to dispose of surplus apicultural property.

There will be no charge for advertising, and if the articles be not sold, the advertisement may remain for three months, after which it must be withdrawn, or the prices of the articles reduced.

The names of advertisers will not appear.

All monies must be deposited with the Editor, who will communicate with the vendor, when, if a sale be effected, one penny in the shilling will be charged on all amounts not exceeding one pound, and one halfpenny additional will be charged on every shilling beyond that amount, and the balance forwarded to the vendor.

Should no sale take place, the money deposited will be returned to the depositor, less a uniform charge of fourpence to cover postage.

The carriage of all articles sent must be paid for by the depositor, and if not equal to the description given, the advertiser must pay the cost of their return.

No advertisement must contain more than sixteen words. P. O. Orders to be made payable to C. N. Abbott, office of *British Bee Journal*, Hanwell, W., London.

No.		
1	A six framed double walled hive, Woodbury size	7s. 6d.
2	Neighbour's cottage hive, complete in first rate condition	20s.
3	Large Observatory Unicomb hive with venetian blinds both sides, holds six frames, Woodbury size	40s.
4	Small observatory hive, holding three Woodbury frames	25s.
5	A bee house to hold two hives, with folding doors at back	20s.
6	An Addeys 10-framed super, never used since received from him	5s. 6d.
7	A double walled Woodbury hive, in use two seasons	12s. 6d.
8	A zinc circular feeder with wooden float and glass cover complete	2s.
9	Marriott's Cottage Hive complete, with glass supers as good as new, never been out of doors	22s. 6d.
10	Glaziers diamond for glass cutting for hives ...	10s. 6d.
11	A Woodbury hive in good condition ...	8s.
12	A Woodbury set of outer cases and roof, cost price, 35s	10s. 6d.
13	A Woodbury super, bars, adapting board and wood frame glass panels, value £1 1s ...	8s 6d.
14	A double cased Cottage Woodbury hive as advertised, never been used	21s. 6d.
15	A Neighbour's bee stand for Woodbury hive, cost price, 10s 6d	5s
16	A straw and wood bar frame hive in good condition, 13 by 13 by 10 9 frames	10s. 6d.
17	Twelve Woodbury frames of comb, clean and fairly straight	12s. 6d
19	A Swiss hive in fair condition. 8 frames ...	5s. 6d.
20	Glass preserve jars for storing honey or feeding bees, hold one pound, per dozen ...	7s.
21	Large earthen jar for storing honey, 20 inches high, 13 diameter	5s.
22	A useful bee house, to hold three hives, in good condition, top lifts off	25s.
23	Barley sugar for feeding bees in 12lb. tin cases. 1s 6d allowed for case on return	10s. 6d.
24	One of Mr Neighbour's bee stands, usually sold 10s. 6d	7s.
25	Second hand Cottage Woodbury hive, double cased, no super...	14s.
26	A set of four cast iron legs for bee stand, to screw to four scantlings	5s.
27	One dozen second hand one frame queen boxes for transmission of queens by rail ...	5s.
28	One pure Italian queen in box ...	21s.
29	One beautifully made bar frame super, dovetailed with windows and shutters	12s. 6d.

BEE CLUBS.

SIR,—I enclose a copy of the Rules of the Dawlish Bee Club here. I have little doubt but that their publication will be the means of our receiving many valuable hints, and at the same time may be of service to others. C. E. FLETCHER.

Luscombe, Dawlish.

ORIGIN.

The immediate origin of the Club was a wish on the part of some of the Members to take advantage of the liberal offer of the editor of the *British Bee Journal*, in hopes that the knowledge thus disseminated by the distribution of a number of copies of the valuable Journal among the Members would tend to an improved method of bee keeping, and by introducing a more humane treatment of the industrious insects, at the same time materially benefit the bee keepers themselves, by showing them what a much more lucrative method the humane system is than the old plan of smothering them with brimstone.

OBJECT.

The object of the club is to promote bee keeping on the humane or depriving system, by disseminating knowledge, giving prizes, or by any other means that may from time to time be determined on.

RULES.

1. That any one subscribing not less than 9d. per quarter in advance, shall be a member of the Club.

2. That the money so subscribed be utilized, in the first place by obtaining as many copies of the *British Bee Journal* as possible with the one year's subscriptions according to the rules for bee clubs as laid down in that Journal, and that all such copies of the Journal be forwarded to the secretary for distribution.

3. That to facilitate the circulation of the papers among the members, the secretary be authorised, from time to time, as may be convenient, to form all members subscribing less than 6s. 6d. per annum, into groups according to their rates of payment and places of abode, for the distribution of the papers, and that one paper shall circulate during the month of such groups, and that no fresh copy shall be issued to such group until the copy last issued shall have been returned to the secretary complete, in good order, and *clean*.

4. That all members subscribing 6s. 6d. per annum or upwards, shall be entitled to a copy of the paper for their sole use and property.

5.—That at the completion of every twelve numbers of the Journal, all copies remaining in the hands of the secretary shall be distributed in complete sets of twelve, by lot, each member subscribing less than 6s. 6d. per annum being entitled to such a number of tickets as shall fairly represent his subscription.

6. That the hive or whatever may be obtained from the editor, as bonus, be retained in the secretary's hands until the members have determined how it shall best be disposed of for the advantage of the club and the furtherance of bee keeping, and that as soon after the receipt of such hive or bonus as may be convenient, the secretary shall call a meeting of members to decide upon such disposition, and that at such meeting the votes of the majority of the members present shall decide all questions brought before such meeting.

7. That as all communications for the Journal have to be forwarded through the secretary, members wishing to communicate with the editor, must in all cases provide the secretary with a fair written copy of such communication, written on one side of the paper only, together with a stamped envelope to forward the same, and a second stamped envelope for the reply, if such is wished for by post.

N.B. In order to start the club, it is necessary to have one year's subscription in hand, as the subscription to the Journal has to be prepaid for the year, members are therefore requested to pay one year in advance, and after that they will pay quarterly at the *end* of every three months, dating from the 1st* of January, 1874.

SECRETARY'S REGULATIONS.

1. Keep a collection book in which each quarter's payment of each member shall be entered as paid on one line, and carried out on the same line under the total column.

2. Write the name or names on each paper, before distribution, of the member or members who are entitled to its use, and underline the one to whom it is given, and on a paper being returned, run a pencil mark through the name of the member returning it, so that in case of any dispute, it may be known who should be held responsible.

3. *Never* give out a fresh copy to members subscribing less than 6s. 6d. per annum, without receiving the old one first, in good condition and *clean*, and *never* before the subscription has been prepaid.

*By an oversight, the date of the paper sent round for approval was the 1st of May, but the earlier date is necessary so as to complete the subscriptions of the year by the end of March, that arrangements may be made to secure a proper number of the Journals being forwarded on the 1st May.

To get a year's subscription in hand, as well as to prepay the quarter now due, would necessarily press rather heavily, though when once properly started this will not be felt, and in order to ease the payments now due as much as possible, it is proposed that the year's subscription that will have to be sent up to the editor before May, be paid forthwith, and that the quarters due on the 31st of March and the 30th of June, 1874, respectively, be collected together at the later date, after which the regular quarterly subscription will be all that will be required,

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WEIGHT OF BEE-BREAD.—Age will cause hives to weigh heavier than their legitimate contents would call for. This is owing to the accumulation of bee bread or pollen in the cells, and also of the cast-slough which formerly served as envelopes for the young. In the case of an old hive, therefore, an allowance of from two to five pounds must be made for these matters, according to age, when endeavouring to estimate the honey contents of the combs.

BEES in the formation of their cells have to solve a problem which would puzzle some geometers, namely, a quantity of wax being given to form of it similar and equal cells of a determinate capacity, but of the largest size in proportion to the quantity of matter employed, and deposed in such a manner as to occupy in the hive the least possible space. (Kirby).

Queries and Replies.

QUERY No. 89.—I have one of Munn's triangular bar frame hives. The bees have built their combs out of line on the bars, so that I cannot raise the frames into the observation case without breaking the combs. It will be necessary to cut away the combs and put them on again straight. When will be the best time for doing so? I imagine, if they swarm at all, it will be late, as there are two or three frames with only small combs on, and all will bear considerable lengthening, so that if they should do this previous to swarming, that will not take place till rather late.—Many cottagers in this neighbourhood have lost their bees during the winter. My eight hives are all doing well, but then I fed liberally in the autumn. A stamped envelope enclosed for answer to query.

Market Drayton. A.C.

REPLY TO No. 89.—Bees seldom build their combs either straight or true enough to permit of their being raised perpendicularly without danger of injury to either the comb or the brood, and, when straightened as is proposed, the chances are against the bees allowing them thus to remain capable of inspection in the observation case, for it commonly happens that through the lengthening of some of the cells, the faces of the combs are rendered uneven. The combs should not be interfered with until the bees will be able to repair and fix them when rectified. This may be during the month of April, or not until May, depending on the state of the weather for general temperature, or on the ability of the bees to engender sufficient heat in the hive to enable them to manipulate the wax. If the combs be broken, and they cannot immediately repair them they are apt to break away the ragged portions, and leave holes or gaping seams in them, and nothing seems to irritate bees more than an insecure comb *i.e.*, one on which from its tottering state, they cannot cluster securely. It is pitiful to hear of the effects of the last season, on stocks left to winter, and painful to witness the stupidity of a certain class of bee keepers who will not profit by experience. ED.

QUERY No. 90.—When is the right time to put supers on? How can I prevent my bees from swarming when the supers are on? Some bee books recommend raising the hives about an inch from the floor-board by placing a small block at each corner? Do you think that a good plan, or will it create fighting, as the robber bees will more easily be able to get into the hive? Do you think it would be a good plan if I raised them to put perforated zinc all round? Would it be injurious to the bees if I varnished the outside of the woodwork of my supers, and also the outside of the straw work of Neighbour's Cottage Hive? Will the bees work as well in three small supers on a Neighbour's Cottage Hive, or had I better put one large one on? Will wood half an inch thick be thin enough for adapters, or should it be thiner?

Alphington, Exeter. W.N.G.

REPLY TO No. 90.—Supers should be put on when the bees show signs of overcrowding. You cannot positively prevent swarming, but by giving ample space and ventilation its probability will be greatly reduced. Raising the hive from the floor board, say half an inch will not induce robbery if the bees are sufficiently strong to render such extra entrance space necessary. We have many times had occasion to raise the Woodbury all round, so that bees could get out at any point, and never yet had cause to regret so doing, but it has only been in cases where the army of bees were enormous, and big Woodbury supers were being filled. If the bees are strong enough in numbers, perforated zinc is not required, if not and slight ventilation is necessary, raising the front of the hive by the insertion of a couple of pennies will be ample, or if more be required, place one under each corner. Bees work best in large supers, where the hive is sufficiently large to permit of the breeding of large populations, and such actually exist, but in the Neighbour's hive the greatest profit will be made by the use of the glasses sent with it, as from the hive being comparatively small, a good queen, if properly stimulated, will furnish a surplus of population sufficiently early to enable you to remove a complete super, weather permitting, before the end of May, and during the summer the glasses may be removed and replaced seriatim.

With small supers, you will get some completed, with large ones it may be the end of the season before they are fit for removal, and even then they may not be completed. In either case where glass supers are used, be careful to keep them warm with cases of flannel and wadding, and see that means are provided by which the bees can ascend to the top of them, *i.e.*, let the tube or stick inserted in the top be of sufficient length to reach them in the top of the hive. A quarter of an inch is ample thickness for adapting boards. We prefer to use them double, or in other words to have thin bottom boards to the supers placed over them, with corresponding perforations, so that when a super is removed, it may be taken away without the probability of disturbing or injuring the combs, which are usually built down to the board on which they stand. Varnishing the outsides of supers can do no injury, but varnishing the straw is not recommended. It is said to prevent the escape of the vapours of the hive, and hinder ventilation, yet considering 'that every straw is coated naturally with sillicate, and that the bees stop up all crevices, and varnish the inside of the hive with propolis, we cannot think it would do much harm. ED.

NOTICES TO CORRESPONDENTS AND ENQUIRERS.

E. T. GRAYS.—The Phacelia seed we sowed last year came up as usual, produced a good crop of flowers, and afforded excellent pasture for the bees, which gathered from it every day as long as it lasted. This year we intend to sow it in succession, so as to keep up a supply. Our experience of it as a bee flower is that it is second to none while it lasts, either for the quantity or quality of its honey yield. It has also the merit of being very pretty both in flower and foliage. Finzel sugar we are entirely unacquainted with as bee food; perhaps some of our correspondents will give their experience.

* Although we have increased our space on many occasions, at considerable expense to ourselves, and we trust satisfaction to our readers, we have still a considerable amount of correspondence on hand, which we are unwillingly compelled to defer to our next issue.

WE are truly thankful for all past favours and earnestly hope the coming season will be a prosperous one for all bee-keepers. We must, however, remind our readers that we have not yet had any of the weather usually waiting upon the "Ides of March," and beg to caution them against its probable unseasonable visitation.

SCALE OF CHARGES FOR ADVERTISEMENTS.

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Two lines of twelve words each	0	1	6
Per line afterwards	0	0	6
,, Inch of Space	0	5	0
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,, Half ditto, or quarter page	1	0	0
,, Column, or half page	1	15	0
,, Full page	3	3	0

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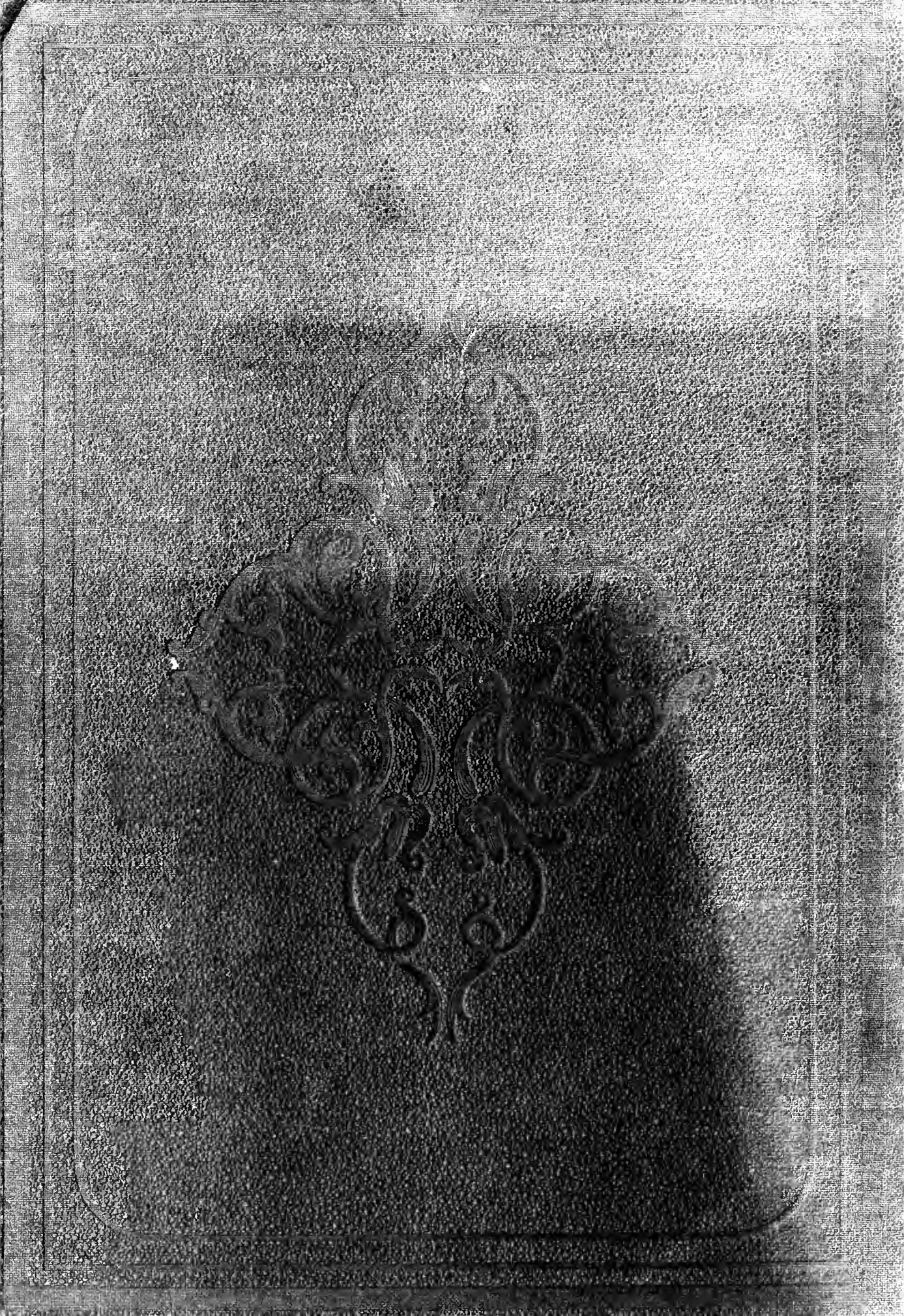
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